**PROCUREMENT IN PROJECT ENVIRONMENT**

**TOPIC 2: INTRODUCTION TO PROJECTS**

# Project Meaning and Examples

## Meaning of Project

In the literature, the term **project** is defined in general as follows:

### is a temporary unique endeavour undertaken to produce a set of deliverables within clearly specified time, cost, and quality constraints.

In more concrete terms, a project exists only after a decision has been made to address a specific need, funding is available to support its execution, and measurable goals and objectives are well defined. A project has a defined start (the approval, or decision to proceed) and a defined end (the achievement of the goals and objectives). It is a one-off activity and would not normally be repeated. All projects are different but they have certain common features which are critical for their success, especially:

* A clear and well-defined scope that can be achieved in a limited time.
* A clear and an agreed deadline for the outcomes to be achieved.
* Resources that are made available to achieve the outcomes of the project.
* A project owner who expects the outcomes to be delivered in time and who will be responsible for the management of the investment, bear all related costs, and be liable for the safe functioning.
* An experienced project team and in particular a project manager whose capabilities match the complexity of the project.
* Defined and visibly managed processes that are appropriate for the scale and complexity of the project.

## Examples of Projects

Examples of projects include:

* the development of a computer-based information system
* the construction of a building, bridge or road
* the development of a Web learning site
* the development of a marketing multimedia presentation
* the upgrading of a building, bridge or road
* the construction of an airport
* the upgrading of a bus station
* the construction of a classroom block
* the maintenance of a block of apartments

# 2.0 The Nature/Characteristics of a Project

The most obvious characteristic of a project is that it has to achieve a particular purpose, and this is normally indicated in the project’s name which normally includes the word **Project** at the end.

Examples of project names are:

* The **Northern Bypass Project**. This is the project that was undertaken to create the Northern By- pass road.
* The Uganda Communications Commission House Project. This is the project that was undertaken to create the building called the Uganda Communications Commission House.
* The **MTN Tower Project**. This is the project that was undertaken to create the building called the MTN Tower.
* The **Nelson Mandela National Stadium Project**. This is the project that was undertaken to create the stadium called the Nelson Mandela National Stadium.
* The **Entebbe International Airport Renovation Project**. This is the project that was under-taken to renovate the Entebbe International Airport.

**NB**: There is a difference between the ***Northern By-pass*** and the ***Northern By-pass Project***. The **Northern By-pass was the product delivered/created** and the **Northern By-pass Project was the project undertaken to deliver/create the product**.

The project’s name distinguishes it from routine activities which are part of an organization’s normal business, such as running the payroll, editing a daily newspaper or producing another ten thousand kilograms of sugar.

When a project is successfully completed it will have an impact on people’s lives, by changing their working patterns or by changing their environment. Managing change is clearly different (and at times much harder) than managing the status quo and it is for this reason that projects are established to effect such change in a controlled manner.

Projects can vary hugely both in their subject and in their size. A project can range from putting a man onto the moon, to selecting a new coffee machine for the office. Projects exist in all sorts of different types of business, such as information systems, construction, finance, marketing, industrial research and local government.

Moreover, no two projects are the same. A project to develop this year’s model family saloon may look suspiciously like last year’s but its objectives will be different, the circumstances will have changed and it will involve different people.

For this matter, the main characteristics of a project are that it:

* Is an instrument of change (i.e. an end product or service must result).
* Has a clearly identifiable start and finish (i.e. it is a temporary finite endeavor).
* Has a specific aim (i.e. goal-oriented).
* Results in something being delivered.
* Is unique (i.e. a one-time set of events).
* Is the responsibility of a single person or body (i.e. many people involved, usually across several functional areas in the organisations).
* Involves limited cost, resources and time (i.e. limited resources and budget).
* Uses a wide variety of resources and skills.
* Involves progressive elaboration (i.e. more details are added in an iterative fashion revealing and focusing them through time).
* Has complex and numerous sequenced activities.

All of these characteristics will not necessarily be obvious when a project is initiated. We may know the specific aim, but we will be aware of hidden agendas. Even if we have been given a budget and a deadline, we may still have little idea of the real cost, resource and time considerations of the project. All of these will have to be verified during the early part of the project.

Perhaps the only thing that the Project Manager can be sure of is that it is his/her responsibility and he/she will be judged by its success or failure.

# 3.0 Difference between a Project and a Standard Business Operation

Generally speaking, projects are different from standard business operational activities as they:

* Are **unique** in nature. They do not involve repetitive processes. Every project undertaken is different from the last, whereas operational activities often involve undertaking repetitive (identical) processes.
* Have a defined **timescale**. Projects have a clearly defined start and end time/date within which the deliverables must be produced to meet a specified customer requirement.
* Have an approved **budget**. Projects are allocated a level of financial expenditure within which the deliverables must be produced to meet a specified customer requirement.
* Have limited **resources**. At the start of a project an agreed amount of labour, equipment and materials is allocated to the project.
* Involve an element of **risk**. Projects entail a level of uncertainty and therefore carry business risk.
* Achieve beneficial **change**. The purpose of a project, typically, is to improve an organisation through the implementation of business change.

# Institutional Framework of a Project

Every project finds itself in the middle of different stakeholders, individuals and organisations who are actively involved in the project, or whose interest may be affected in a positive or negative manner as a result of project execution or successful project completion. The institutional framework of a project usually consists of:

* Project Beneficiaries,
* Project Owner,
* Contracting Authority,
* Implementing Agency, and
* Funding Agency

## Project Beneficiaries

The Beneficiaries of a project are the future users, those for which the project is implemented, those whose needs have to be satisfied and taken into account when the project is set up. Their close involvement into the needs assessment is important whenever it is possible. If the needs assessment is flawed or wrong the whole project will be a failure. The end beneficiary of all public projects — directly or indirectly — is the general public, the citizen.

## Project Owner

The project owner is the legal entity which takes the legal responsibility for the project once it has been implemented. Normally, the mastermind of the project, i.e. the entity that instigated and conceived the project will later become the project owner. Its commitment is a prerequisite for the project success. The project owner is the representative of the beneficiaries.

The project owner will be responsible for the maintenance and the operational cost of the project. From this point of view, a cost-efficient solution over the whole life-cycle of the investment and a reasonable scope of the project are in the best interest of the project owner. It will, therefore, meticulously check the cost-benefit analysis and insist that a solution is found which the project owner can afford also on the long run.

Small straightforward projects may be implemented (managed) by the project owner, either with own capacities or by contracting economic operators (i.e. contractors) for single components. But it cannot be expected that public project owners will be staffed to meet all challenges to implement all projects they own. For most of its projects, a project owner will have to assign the implementation of the whole project to an economic operator by conducting a tendering process. The tendering process is conducted either with own resources (in this case the Project Owner is also the Contracting Authority) or it may be formally assigned to another Contracting Authority.

## Contracting Authority

The Contracting Authority is the central government or the legal person governed by public law which is responsible for conducting the public procurement process and concluding the contract on its behalf (in this case it is also the Project Owner), or on behalf of a third party, which is the Project Owner. If the Contracting Authority is adequately staffed to support the project implementation, it also under- takes the role of the Implementing Agency.

## Implementing Agency

The implementing agency is an entity with sufficient technical and managerial know-how and capacity to put the project design (the stipulations in the Project Plan) into reality. This requires, amongst others, adequate authority, control, financial resources, technical competence, legal expertise, and managerial capacity to implement the project. If the project owner is a public entity (e.g. a municipality, a regional administration, or a department at central level), the implementing agency would, ideally, be an entity in the public sector, depending on the scope, the territorial coverage, or the importance of project. The public sector is, therefore, usually organised in such a way that important publicly owned projects can be implemented by public implementing agencies. However, in many cases, the project management or the implement-ation itself is contracted out to private firms. It should be noted that in any case the responsi-bility of decision making remains to the implementing agency.

### NB:

No matter whether done by a public or a private entity, the services for the implementation of a project are not free of charge. Related costs have to be included in the project budget.

## Funding Agency

The project owner may be in a position to self-finance its project, have the project co-financed from other sources, or finance the project entirely from external resources. The funds may be made available from the regular budget of the project owner or, in the case of external funding, in the form of a grant or a loan.

### NB:

It is worth remembering that for public projects the taxpayer/citizen is the original ***source of funding***, providing funds, dominantly via the taxation system. As the general public is the original provider/co- provider of funds, the public interest is the supreme criterion when deciding on scope and design of a project. Cost-efficiency in terms of initial cost and, as important, operational cost is of highest importance.

# Different Types of Projects

The principal characteristic of a project is its ***novelty.(the quality of being new, original, or unusual***.) It is a step into the unknown, fraught with risk and uncertainty. No two projects are ever exactly alike: even a repeated project will differ from its predecessor in one or more commercial, administrative or physical aspects. However, it has been found convenient to identify four different types of projects: ***Type I Projects***, ***Type II Projects***, ***Type III Projects*** and ***Type IV Projects***.

## Type I Projects: Civil Engineering, Construction, Petrochemical, Mining and Quarrying Projects

Projects in this category spring to mind whenever industrial projects are mentioned. One common feature is that work must be conducted on a site that is exposed to the elements and usually remote from the contractor’s head office. These projects are thus open to public gaze. They incur special risks and problems of organisation. They may require massive capital investment and they deserve rigorous management of progress, finance and quality. Operations are often hazardous so that health and safety aspects demand special attention, particularly in work such as heavy construction, tunnelling and mining.

For very large industrial projects the funding and resources needed can be too great for one contractor to risk or even find. The organisation and communications are therefore likely to be complicated by the participation of many different specialists and contractors, possibly with the main players acting together through a consortium or joint venture company established specifically for the project.

## Type II Projects: Manufacturing Projects

Manufacturing projects result in a piece of mechanical or electronic equipment, a machine, ship, aircraft, land vehicle or some other product or item of specially designed hardware. The finished product might be purpose-built for a single customer but internal research and development projects for products to be sold in all market sectors also fall into this manufacturing category. Manufacturing projects are usually conducted in a laboratory, factory or other home-based environment where the company should be able to exercise on-the-spot management and provide an optimum environment in which to do and manage the work. Of course, these ideal conditions do not always apply. Some manufacturing projects involve work away from the home base, for example in installing and commissioning a machine or equipment on a customer’s premises, customer training and post-project service and maintenance.

More difficult is the case of a complex product that is developed and manufactured by a consortium of companies, sometimes with members based in different countries. An example is aircraft production, where the engines might be developed and manufactured in one country, the wings in another and the final assembly taking place in a third country. Such international manufacturing projects are prone to higher risk and difficulties in control and coordination arising through organisational complexity, national rivalries, contracts, long-distance communications, multiple languages and conflicting technical standards.

## Type III Projects: IT Projects and Projects Associated with Management Change

This class of project proves the point that every company, whatever its size, can expect to need project management expertise at least once in its lifetime. These are the projects that arise when companies relocate their headquarters, develop and introduce a new computer system, launch marketing

campaign, prepare for a trade exhibition, produce a feasibility or other study report, restructure the organisation, mount a stage show, or generally engage in any operation that involves the management and coordination of activities to produce an end result that is not identifiable principally as an item of hardware or construction.

Most not-for-profit organisations, including national and local government departments, professional associations, charities and disaster relief agencies, conduct projects that fall into this category of management projects.

Although management projects do not usually result in a visible and tangible creation such as a piece of hardware, much often depends on their successful outcome and they can require enormous invest- ment. There are several well-known cases where, for instance, failure to implement a new computer system correctly has caused serious operational breakdown exposing the man-agers responsible to public discredit. Effective project management is at least as important for these projects as it is for the largest construction or manufacturing project.

Type 3 projects may be associated with, or even depend upon, Type 1 or Type 2 projects. For ex- ample, if a company decides to relocate to a new purpose-built office, the overall relocation project is itself a Type 3 management project but its success will depend also on the Type 1 project needed to construct the new building. Thus projects of different types may be associated with each other in a company‟s project programme or project portfolio.

## Type IV Projects: Projects for Pure Scientific Research

Pure scientific research projects (not to be confused with research and development projects) are a special case. They occasionally result in dramatically profitable discoveries. Conversely, they can consume vast amounts of money over many years yet yield no practical or economic result. Research projects carry the highest risk because they attempt to extend the boundaries of human knowledge.

The project objectives are usually difficult or impossible to define and there may be no awareness of the possible outcome. Therefore, pure research projects are not usually amenable to the project management methods that can be applied to industrial, manufacturing or management projects.

Some form of control over pure research projects must, however, be attempted. Money and other resources cannot be spent without any form of monitoring or restraint. Budgets have to be set in line with available funding. A sensible method for controlling a pure scientific research project is to conduct regular management reviews and reassessments of the potential value of the project. At each review, a decision can be taken stop the project (known colloquially as „pulling the plug‟) or release new funding to allow it to continue at least until the next review. Although this can be unsettling for the scientists involved, the project sponsor is not expected to pour money forever into a vast hole. This procedure, where continued project funding is dependent upon regular reviews, is known as ***stage-gate*** control.

Although the research activities might themselves lie outside the scope of familiar project management methods, the provision of accommodation, communications, equipment and research materials can constitute Type I, II or III capital investment projects to which proper project management can and must be applied.

# Project Constraints

All projects, irrespective of their size, will have many constraints. Although there are many such

project constraints, these should not be barriers for successful project execution and for the effective decision making. Of the many project constraints, there are some (referred to as ***Primary Project Objectives***) which are used as **factors for assessing/measuring project success or failure**. That is, the success of the contractor and the project manager will usually be judged or measured according to how well they achieve a number of primary objectives.

## Primary Project Objectives

The two traditional measurements for project success are:

1. **Time** — This is the time frame available to complete the project. Then, the question is “Was the project delivered or handed over to the customer on time?”

There are, however, three additional measures of success that need to be considered:

1. **Scope** — This is determined by project size, goals and deliverables. Then, the question is “Where the project goals met?”
2. **Quality** — This is determined by good performance, which requires that all aspects of the project are finished in accordance with the customer’s project specification. It represents the quality of the project deliverables. Then, the question is “Was the client satisfied?”
3. **Resources** — Resources are the people and equipment required to carry out the project. Then, the question is “Were there no casualties, either to the team or to interrelationships?”

Therefore, there are five interdependent primary project objectives which must be managed effectively for project success. Unfortunately, many people concentrate so much on the first two — time and budget — they fail in the latter three. While this may be good for project managers and their organisations in the short term, in the long term it has a detrimental effect.

Generally speaking, three of these constraints are main. Every project, no matter the size or magni- tude, must be completed under them. These constraints are:

* **Scope** — project size, goals and deliverables.
* **Time** — time frame available to complete the project.
* **Cost (or Budget)** — amount (in shillings) budgeted for the project.

### Understanding the Primary Project Objectives

Let us try to understand each of the elements/constraints of project management and then how to face challenges related to each.

### Time

A project's activities can either take shorter or longer amount of time to complete. Completion of tasks depends on a number of factors such as the number of people working on the project, experience, skills, etc.

Time is a crucial factor which is uncontrollable. On the other hand, failure to meet the deadlines in a project can create adverse effects. Most often, the main reason for organizations to fail in terms of time is due to lack of resources.

### Cost

It’s imperative for both the project manager and the organisation to have an estimated cost when under- taking a project. Budgets will ensure that the project is developed or implemented below a certain cost.

Sometimes, project managers have to allocate additional resources in order to meet the deadlines with a penalty of additional project costs.

### Scope

Scope looks at the outcome of the project undertaken. This consists of a list of deliverables which need to be addressed by the project team.

A successful project manager will know to manage both the scope of the project and any change in scope which impacts time and cost.

### Quality

Quality is not a part of the project management triangle, but it is the ultimate objective of every delivery. Hence, the project management triangle represents implied quality.

Many project managers are under the notion that ***high quality comes with high cost***, which to some extent is true. By using low quality resources to accomplish project deadlines does not ensure success of the overall project.

Like with the scope, quality will also be an important deliverable for the project.

### Resources

Resources refers to the people, equipment and other materials in use on the project. For good project performance, there must be sufficient resources for the project.

### Relationship between the Primary Project Objectives

The interrelationship of these five measures of project success can be represented graphically in what is often referred to as the ***Triple Constraints of Project Management*** or the ***Project Management Triangle*** or the ***Time, Cost, Scope Triangle*** or the ***Magic Triangle*** of a project (see Figure 1).

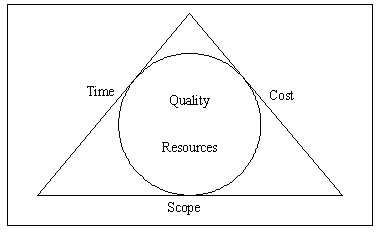


Figure 1: The Project Management Triangle

As shown in Figure 1, each major constraint represents a side of the triangle. The ***Scope*** side represents the agreed-upon project work and requirements (i.e. it is the amount of work to be done in a project), the ***Cost*** side represents the total shilling cost of the project, and the ***Time*** side represents the

project duration. Inside the triangle, ***Resources*** refers to the people, equipment and other materials in use on the project and ***Quality*** refers to how close the project is to satisfying clients. Inside the triangle is the quality of the project deliverable(s). While arguable as far as whether quality is an actual cons- traint of a project, it is the direct result of the competing project priorities and is an important factor at the forefront of any project.

What the triangle portrays is that there is a relationship between the scope of a project, how long that project will take, and how much it will cost. If the scope of the project is increased and once estimates have been established for the time and cost, the only way to maintain the same relationship is also to increase time (leading to what is referred to as ***time overrun***) and/or cost (leading to what is referred to as ***cost overrun***).

If time and cost are kept the same (i.e. held to the original settings), and scope is increased (as a result of the continual addition of unplanned work to the project, this leads to what is referred to as ***scope creep***. This makes the other two components suffer — either resources are overworked, which may lead to casualties, or quality is reduced, which may lead to unsatisfied clients. In some cases, both of these may happen.

It is occasionally necessary to identify one of the primary objectives as being of special importance. This emphasis can affect the priority given to the allocation of scarce resources and the way in which management attention is concentrated. It can also influence the choice of project organisation structure.

A project for a charitable organisation with limited funds would have to be controlled very much with budgets in mind so that costs must be the project manager’s chief concern. Industries such as aero- space and nuclear power generation have to place high emphasis on safety and reliability so performance should be the most important objective. A project to set-up and stock a stand at a trade exhibition, for which the date has been announced and the venue booked, is so dependent on meeting the time objective that it might be necessary to overspend on budgets to avoid missing the date.

### The Quality/Cost Relationship

It is a mistake to believe that there can be a simple and acceptable trade-off between quality and cost. Those who promote total quality management argue, correctly, that quality can be achieved without extra cost. However, there is an even more fundamental reason why quality cannot be downgraded or compromised to save money. This becomes clear when we accept the definition of quality as a service or product that is ***fit for the purpose for which it was intended***. No contractor or project manager should ever contemplate a result that is not ***fit for purpose***.

Therefore downgrading quality is not an option. That is why performance or level of specification is placed at the corner of the triangle of objectives rather than quality.

This distinction between quality and specification is illustrated by the following example. Suppose that the initial estimates for a new building are too high and that construction costs must be reduced. One option might be to build on relatively simple foundations instead of using deep sunk piles, which could save thousands of pounds. But if the ground conditions demand piling for the building to be safe, that cost-saving option is ruled out on the grounds of reliability and safety. It would compromise quality and is not a viable option. The building would not be fit for its intended purpose.

However, suppose that the same developer reviews the specification for interior finishes and finds that marble floors could be replaced with carpeted floors at a substantial cost saving. The floors would still

be serviceable and fit for purpose. Carpeting would, therefore, be an option that would not compro- mise quality. Quality has not been changed but the specification has.

### The Time/Cost Relationship

There is usually a direct and very important relationship between time and money. If the planned timescale is exceeded, the original cost estimates are almost certain to be overspent. A project costs money during every day of its existence, working or non-working, weekday or weekend, from day one of the programme right through until the last payment has exchanged hands. These costs arise for a variety of reasons, some of which will now be explained.

### The effect of project delays on direct costs

The variable or direct costs of labour and materials are time-related in several ways. Cost inflation is one factor, so that a job started and finished later than planned might cost more that the original estimate because of price rises in materials and increases in wages, salaries and other costs.

There are other less obvious causes where late working implies inefficient working, perhaps through lost time or waiting time (often the result of materials shortages, missing information or poor planning, communications and organisation). If any project task takes longer to perform than its planned duration, it is probable that the budgeted man-hours will be exceeded. This is true not only for a single task but also for the project as a whole.

### The effect of project delays on indirect (overhead) costs

The fixed or overhead costs of management, administration, accommodation, services and general facilities will be incurred day by day, every day, regardless of work done, until the project is finished. If the project runs late these costs will have to be borne for a longer period than planned. They will then exceed their budget.

### The effect of project delays on the costs of financing

Another important time-related cost is financing. Where the contractor has an overdraft at the bank or relies on other loan financing, interest has to be paid on the loan. Even if the contractor finances the project from available funds there is still a notional cost of financing equivalent to the interest or dividends that the same funds could have earned had the contractor invested the money elsewhere (such as in a bank deposit account). If a project runs late, the financing period is extended and the amount of interest or notional interest payable must increase correspondingly.

Much of the money for a large project is likely to be invested in work in progress as the project proceeds. This work in progress includes not only the tangible results of a project, such as construction or manufacture, but also intangible elements such as planning and engineering or design. In many projects the contractor can only charge the customer for work that can be certified as finished. For example, in construction projects the amount of work completed usually has to be inspected and certified by an independent quality surveyor or engineer before it can be billed to the customer. The customer will not pay without the receipt of certified invoices to show that the work claimed has been done. Certified invoices are often linked to planned events or milestones. If a milestone has not been reached, a certified invoice cannot be issued. Pay-ment of the contractor‟s revenue is then delayed which means that the contractor must continue to finance the mounting costs of the project. The contractor could then suffer severe cash flow problems and even financial ruin.

### Cost penalties

Some contracts contain a penalty clause which provides the customer with the sanction of a cost penalty against the contractor for each day or week by which the contractor fails to meet the contracted delivery obligation.

### The total cost effect of project delays

All these time/cost considerations mean that delays on a project can easily cause additional costs amounting to thousands of pounds per day. It is clear that if work can be managed so that it proceeds without disruption against a sensible and achievable plan, much of the battle to control costs will have been won.

## The Project Management Triangle and Project Deliverables

The project management triangle is used by managers to analyse or understand the difficulties that may arise due to implementing and executing a project. Furthermore, the project management triangle is often used to illustrate that project management success is measured by the project team’s ability to manage the project or part of the project so that the expected results are produced while managing time and cost.

The triple constraint is depicted as a triangle with cost, scope, and schedule as the sides of the triangle. It could be said that they contain customer satisfaction that could be considered figuratively to be the interior of the triangle since the customer should always be concerned about scope, time, and cost as well. Thus, in order to create customer satisfaction, we must perform all of the scope that was promised for the budget that we promised and deliver it when it was promised.

The success of the project depends on the project team’s ability to control the available resources of the project in terms of time, cost, and performance. The resources that most projects need to control are money, manpower, equipment, facilities, materials, and information.

In organisations using project management, the projects begin and end, and the project team members come and go. The resources in an organisation like this must be someone’s responsibility when they are not assigned to a project. These persons are the functional managers. The resources really have two managers: the project managers to whom they report when they are assigned to a project and the functional managers to whom they report when they are not assigned to a project.

The problem this creates for the project manager is that none of the people on the project team are assigned permanently to the project manager or the project. If members of the project team are dissatisfied about the progress of the project, there is a good chance they can leave the project and take another assignment. In a sense, nothing is going to get done on the project without the cooperation of the functional managers. If things go wrong on the project and the project manager needs additional resources, it will be the functional manager who juggles schedules for the resources to get the work done.

Project managers must be made responsible for the cost, schedule, and performance of the project. Many times the project manager is much more motivated to achieve high performance at the expense of cost and schedule. This is why it is important that the project manager set his or her own schedules and budgets.

This balance of the legs of a triangle is important to remember. In other words, if we or the customer want to change one of the legs, there will likely be an effect on the others. If the customer wants to

Shorten the schedule; we are likely to have an increase in cost or a reduction in the deliverables or both. If we add work to the project, called ***scope creep***, we are likely to have to increase the cost or revise the schedule or both. If the sponsor of the project wants to reduce the cost of the project, we will probably have to reduce the deliverables.

Today the customer and the stakeholders want all three and put the burden of meeting these constraints on the project manager. It then becomes the responsibility of the project manager and the project team to balance the trade-offs.

Project management is often summarised in a triangle (see Figure 1). The three most important factors are time, cost and scope, commonly called the triple constraint. These form the vertices with quality as a central theme. In summary:

* Projects must be within cost.
* Projects must be delivered on time.
* Projects must be within scope.
* Projects must meet customer quality requirements.

## Achieving the Primary Project Objectives

### Factors for Achieving the Primary Project Objectives

Factors necessary for achieving the objectives include the following:

* Good project definition and a sound business case;
* Appropriate choice of project strategy;
* Strong support for the project and its manager from higher management;
* Availability of sufficient funds and other resources;
* Firm control of changes to the authorized project;
* Technical competence;
* A sound quality culture throughout the organisation;
* A suitable organisation structure;
* Appropriate regard for the health and safety of everyone connected with the project;
* Good project communications;
* Well motivated staff;
* Quick and fair resolution of conflict.

These issues are all important for good project management. An apt definition of a successful project is that it should satisfy all the stakeholders. This is an ideal that might be difficult to achieve because stakeholders often view a project from different perspectives but it is a worthwhile goal.

### Overcoming Challenges to Primary Project Objectives

It is always a requirement to overcome the challenges related to the project triangle during the

project execution period. Project managers need to understand that the three constraints outlined in the project management triangle can be adjusted.

The important aspect is to deal with it. The project manager needs to strike a balance between the three constraints so that quality of the project will not be compromised.

To overcome the constraints, the project managers have a several methods to keep the project going.

Some of these will be based on preventing stakeholders from changing the scope and maintaining limits on both financial and human resources.

A project manager's role is evolved around responsibility. A project manager needs to supervise and control the project from the beginning to the closure.

The following factors will outline a project manager's role.

* The project manager needs to define the project and split the tasks amongst team members. The project manager also needs to obtain key resources and build teamwork.
* The project manager needs to set the objectives required for the project and work towards meeting these objectives.
* The most important activity of a project manager is to keep stakeholders informed on the progress of the project.
* The project manager needs to asses and carefully monitor risks of the project.

The role of the project manager is one of great responsibility. It is the project manager's job to direct, supervise and control the project from beginning to end. Project managers should not carry out project work, managing the project is enough. Here are some of the activities that must be undertaken:

* The project manager must define the project, reduce it to a set of manageable tasks, obtain appro- priate resources and build a team to perform the work.
* The project manager must set the final goal for the project and motivate his/her team to complete the project on time.
* The project manager must inform all stakeholders of progress on a regular basis.
* The project manager must assess and monitor risks to the project and mitigate them.
* No project ever goes exactly as planned, so project managers must learn to adapt to and manage change.

# 7.0 Project Life Cycle

Unlike repetitive functional type work, projects have a clear beginning, middle and end to the work that must get done. This work is expressed in terms of the project life cycle (see Figure 2). The **Project Life Cycle** refers to a logical sequence of activities to accomplish the project‟s goals or objectives. Project activities are grouped into phases so that the project manager and the core team can efficiently plan and organise resources for each activity. By planning activities by stages the project manager can objectively measure achievement of goals and justify their decisions to move ahead, correct, or terminate

All projects go through a life cycle that starts at the initial project inception through project shutdown or closure. When applying **Project Mechanics**, it is critical to accurately assess the stage of the project in the life cycle. It is important to note that not every project will be completed. For example, some projects will not have the proper business justification to make it out of the Project Definition stage.

The generic Project Life Cycle (whose overview is shown in Figure 2) comprises four phases:

* ***Initiation*** involves starting up the project, by documenting a business case, feasibility study, terms of reference(scope and limitations of the activity or area of knowlegde, appointing the team and setting up a Project Office.
* ***Planning*** involves setting out the roadmap for the project by creating the following plans: project plan, resource plan, financial plan, quality plan, acceptance plan and communications plan.
* **Execution** involves building the deliverables and controlling the project delivery, scope, costs, quality, risks and issues.
* ***Closure*** involves winding-down the project by releasing staff, handing over deliverables to the customer and completing a post implementation review.



Figure 2: Basic Overview of the Project Life Cycle A more detailed description of the generic Project Life Cycle follows:

### Phase One: Project Initiation

The Project Initiation phase essentially involves starting up the project. A project is initiated by defining its purpose and scope, the justification for initiating it and the solution to be implement-ed. It is also needed to recruit a suitably skilled project team, set up a Project Office and perform an end of Phase Review. The Project Initiation phase involves the following six key steps:

1. Develop a [Business Case](http://www.method123.com/business-case.php)
2. Undertake a [Feasibility Study](http://www.method123.com/feasibility-study.php)
3. Establish the [Project Charter](http://www.method123.com/terms-of-reference.php) (or Terms of Reference)
4. Appoint the [Project Team](http://www.method123.com/job-description.php)
5. Set up the [Project Office](http://www.method123.com/project-management-office.php)
6. Perform [Phase Review](http://www.method123.com/initiation-phase-review.php)

**Terms of reference: are the scope and limitations of an activity or area of knowledge.**

### Phase Two: Project Planning

During the Project Planning phase, a detailed project plan for executing the goals and objectives documented in the Project Charter is developed. This phase involves creating a suite of planning documents to help guide the team throughout the project delivery. The Project Planning phase involves completing the following 10 key steps:

1. Create a [Project Plan](http://www.method123.com/project-plan.php)
2. Create a [Resource Plan](http://www.method123.com/resource-plan.php)
3. Create a [Financial Plan](http://www.method123.com/financial-plan.php)
4. Create a [Quality Plan](http://www.method123.com/quality-plan.php)
5. Create a [Risk Plan](http://www.method123.com/risk-management-plan.php)
6. Create an [Acceptance Plan](http://www.method123.com/acceptance-plan.php)
7. Create a [Communications Plan](http://www.method123.com/communication-plan.php)
8. Create a [Procurement Plan](http://www.method123.com/procurement-plan.php)
9. Contract the [Suppliers](http://www.method123.com/tender-forms.php)
   * Define the [Tender Process](http://www.method123.com/tender-process.php)
   * Issue a [Statement of Work](http://www.method123.com/statement-of-work.php)
   * Issue a [Request for Information](http://www.method123.com/request-for-information.php)
   * Issue a [Request for Proposal](http://www.method123.com/request-for-proposal.php)
   * Create [Supplier Contract](http://www.method123.com/supplier-contract.php)
10. Perform [Phase Review](http://www.method123.com/planning-phase-review.php)

### Phase Three: Project Execution

The Project Execution phase involves physically building the deliverables and presenting them to the customer for acceptance. While each deliverable is being constructed, a suite of managemen

***processes*** are undertaken to monitor and control the deliverables being output by the project. These processes include managing time, cost, quality, change, risks, issues, suppliers, customers and communication. The Project Execution phase involves completing the following three key steps:

1. Build Deliverables
2. Monitor and Control
   * Perfor[m Time Management](http://www.method123.com/time-management.php)
   * Perfor[m Cost Management](http://www.method123.com/cost-management.php)
   * Perform [Quality Management](http://www.method123.com/quality-management.php)
   * Perfor[m Change Management](http://www.method123.com/change-management.php)
   * Perfor[m Risk Management](http://www.method123.com/risk-management.php)
   * Perform [Issue Management](http://www.method123.com/issue-management.php)
   * Perform [Procurement Management](http://www.method123.com/procurement-management.php)
   * Perform [Acceptance Management](http://www.method123.com/acceptance-management.php)
   * Perfor[m Communications Management](http://www.method123.com/communication-process.php)
3. Perform [Phase Review](http://www.method123.com/planning-phase-review.php)

### Phase Four: Project Closure

The Project Closure phase involves releasing the final deliverables to the customer, handing over project documentation to the business, terminating supplier contracts, releasing project resources and communicating project closure to all stakeholders. The last remaining step is to undertake a Post Implementation Review to identify the level of project success and note any lessons learned for future projects. The Project Closure phase involves completing the following two key steps:

1. Perform [Project Closure](http://www.method123.com/project-closure.php) 2. Review [Project Completion](http://www.method123.com/post-implementation-review.php)