# Project Management Simply Explained
# A Logical Framework to Help Your Understanding[1]

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## Introduction

First, why do we need project management anyway? Projects are about change and we are certainly experiencing a lot of that! According to Cooke-Davies: "Growth, change and projects go together. We face an increasingly turbulent world in which business becomes faster paced more complex and more competitive. In this environment the rewards will go to those organizations which are more flexible, more in tune with their customers' wants, more focused on their main product or service, and more professional in every aspect of their business."[2]

Modern project management is designed specifically to deal with this situation. With flexible project teams and resources focused on the needs of the enterprise, project-based planning and implementation enables the alignment of corporate effort with corporate strategy. Managing by projects helps not only to accomplish this goal but also to develop those qualities of initiative and effectiveness that senior management must have if it is to survive in the future. Indeed, two of the largest project management organizations in the world, the Project Management Institute (US) and the International Project Management Association (Europe), share the same strong perception of project management. That is, the creative concept of project management is universal and generic, crosses all cultural, national and linguistic barriers, and that many of the problems inherent in creating change or adapting to change are common to all.[3]

Some corporate cultures are much more supportive of project working than others. Top managers who plan to introduce the project management discipline, or who wish to improve existing project performance, must pay attention to cultural, structural, practical and personal elements. Project management demands quality information, discipline and goal-orientation and requires team-working skills, rather than rigid functional divisions. Its primary focus is on what has yet to be done, and who will do it, rather than the achievements of the past. It is as much about mobilizing the energies of diverse team members as it is about procedures, tools and techniques.

For the benefits of project management to be realized, it has been suggested that three principle ingredients must first be in place. These are:[4]

- Support from senior management
- Agreement and commitment at the level of responsibility; and
- A willing acceptance at the level of impact.

As Konosuke Matsushita, Executive Director of Matsushita-Electric observed in comparing Western and Japanese management styles: "...for us, the core of management is precisely the art of mobilizing and pulling together the intellectual resources of all employees...only by drawing on the combined brain power of all its employees can a firm face up to the turbulence and constraints of today's environment." In other words, the leaders of the organization must be committed to the concepts of project management and its application and be willing to establish the necessary organizational culture for it to germinate and grow[5].

Project managers are sometimes selected for the depth of their technical competence alone. This can be a mistake. Certainly, he or she must have a good understanding of the technical nature of the project in hand to be able to separate real issues from vested interests. But the primary areas of competence required by every project manager include communication; the ability to get the best out of the real specialists; and planning, forecasting and decision-making skills – the very stuff of future senior management!

**Why do we need a body of project management knowledge?**

A defined, published, and generally accepted project management body of knowledge reflecting good practice is essential if we are to improve the practice of this discipline. Then and only then can we develop recognized education, certification, and accreditation programs. It is therefore understandable that a project management body of knowledge ("PMBoK") is becoming the cornerstone of emerging professional organizations.

However, the world of project management is still developing and will continue to do so. Its range of applications is changing and spreading and consequently its practice continues to evolve. Therefore, any attempts to codify and document what is currently considered to be good practice must also be permitted to evolve, and yet changes to a PMBoK must be developed with some care since the impact will be felt on the entire professional program of these organizations.

To give some idea of the nature of a PMBoK, Figure 1 shows a dynamic illustration of the project management process and helps to provide a simplistic understanding of the complex nature of project management itself. This particular representation was developed as a result of considerable thought over an extended period by a number of experienced members of the Project Management Institute (US).

Shown across the top of the figure are scope, quality, time and cost which constitute the four core target functions of project management (as viewed by a project sponsor) or constraints (as viewed by the project manager). However, the project is enabled by the four facilitating management functions of information/communications, contract/procurement, human resources, and risk.

Project management integrates these functions progressively through the project life cycle, with the aim of satisfying the stakeholders and constituents according to the project's established requirements. Stakeholders are those who have a direct stake in the project while the project's constituents are those who may be impacted by the consequences of the project. Project success is typically generated when the stakeholders and constituents express their collective satisfaction according to the degree of their involvement.

**Is the sequence of PMBoK functions significant?[6]**

In Figure 1 we presented a graphic portrayal of the project management process and identified eight project management functions. Now we will look at these components more closely. Note especially that here is some logic behind the sequence of the functions as shown. When you read in a clockwise direction from the top of the figure, this represents the necessary sequence which you must apply when planning a project.

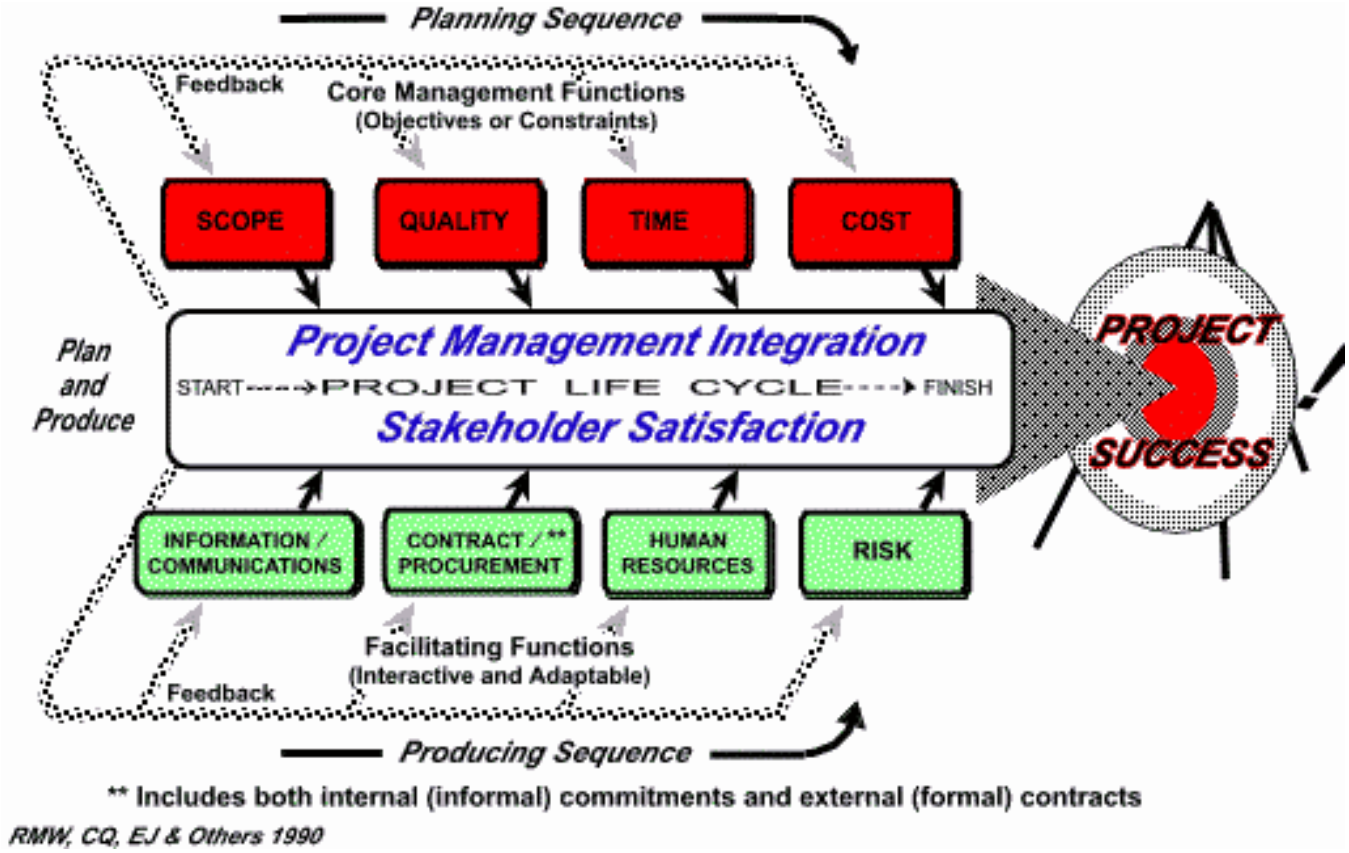


**Figure 1**

In planning a project you need to know:

- First and foremost, what is it that is to be delivered?
  I.e. The project's **Scope**
- To what standards are these things going to be delivered?
  I.e. The **Quality** of the products
- How long is it estimated to take and in what sequence will we do the necessary work
  I.e. The **Time** involved
- Now, and only now, can we seriously estimate what will be the estimated funding required?
  I.e. The **Cost** involved
- How certain are we that we can do all of this?
  I.e. The associated **Risk** (and opportunities)
- What is the quality of human performance required to achieve these results?
  I.e. The **Quality** of the process
- What skills are needed to do the work?
  I.e. The **Human Resources** required
- What resources must be outsourced (contracted for) or what corporate commitments must be obtained (procured internally)
  I.e. The **Contract/Procurement** arrangements
- How is all of this to be melded into an effective and efficient whole?
  By **Information/Communications** of course!

While this sequence in planning is by no means absolute, when ordered in this way the functions do

display a dynamic and progressive relationship. That is, the planning phases of a project can generally best be accomplished by a progressive flow of information, as well as flow of work, through the project management process in the sequence described. In planning there is of course a great deal of iteration required, but the sequence does serve to provide linking and clarification.

In managing the production phases of the project, on the other hand, we tend to move sequentially upward through the list (i.e. anti-clockwise from the bottom left of Figure 1 on the previous page). First, communication must be effectively established with the people responsible to get them to do what is required and refer to the contract or other form of commitment for the agreed upon details. The work is done by the individuals duly assigned, and this applies to the executives and line managers as well as members of the project team. They must use their skills to move the project forward and, as indicated in the list above, the quality of their performance will determine the quality of the product.

Thus, the functional information flow read from the top constitutes **What** is to be managed, while the process flow read up from the bottom reflects **How** it is to be managed.

It will be noted that the first four functions in the list are the traditional, relatively well-defined, passive components of project management. They should be defined as far as possible prior to commencement of the production phases of the project in order to provide a basis for ***project control***. Their documentation may be said to be ***hard***, i.e., scope and quality by requirements and specifications, time by schedules and charts, and cost by budgets, reports and analyses. Time and cost are the firmer by virtue of having a mathematical base. The last four functions, while documentable, require personal interaction and may be said to be the ***soft*** components of project management. They tend to be dependent upon the social sciences, and make a great deal of use of management theory.

Quality is particularly important because it is a ***pivotal function***. It bridges the transition between the hard and soft components since it has two parts, the hard part of product quality, and the soft part of the quality of human performance. It is the latter which in fact determines the quality of the product. The cost and timeliness of all these various activities required to produce the end products to the required quality will together, and in large measure, determine the project's ***success***.

**What is the Project Life Cycle all about?**

In our previous page we discussed the functions of project management and observed the difference between planning a project and delivering the product. "Product", by the way, could be a facility, system, service or other "deliverable". Clearly, successful project management requires careful planning to precede the production work itself and, indeed, this is at the heart of the modern concept of effective project management.

The origin of the project life cycle, life cycle process, project timeline, work flow, or whatever you want to call it, is to be found in the term project management itself. For convenience we'll call it "PLC". First, a project has, by definition, a start and a finish, while the essence of management is to plan before doing. From this we may conclude that the PLC has four basic sequential periods, namely, "start", "plan", "do", and "finish". Indeed, the works of many authors recognize that a project, passes through these four major and distinct generic ***project phases***.

Even at this high level, we continue to marvel at how many organizations skip over a satisfactory start period as a cost avoidance measure, or the project manager short-changes the finish period because either the time, or the money, or both have run out.

Unfortunately, there has been no general agreement on what these four phases should be called. Consequently, they are invariably called by different names. In the engineering and construction industry one hears terms like "initiation, planning, implementation and commissioning". In software engineering quite different terms are used, such as: "Inception, elaboration, construction and transition". However, the general intent is the same. Figure 2 shows the project life cycle diagrammatically.

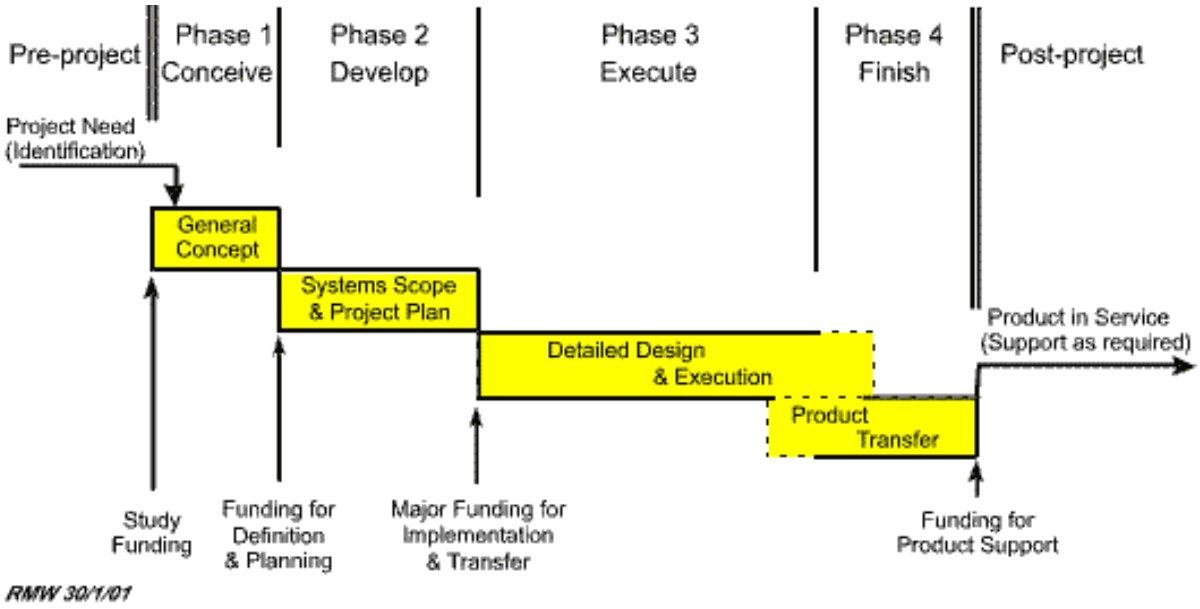


**Figure 2**

We like to refer to the four phases as Conceive, Define, Execute and Finish, which happens to be convenient because the sequence **C**, **D**, **E**, **F**, is easier to remember. In a well organized project each phase is expected to deliver a result at which point an executive decision can be taken on whether to proceed or turn back. These major milestones are typically referred to as "control points", or better: Executive Control Points. However, their intent might be better served by the term "emergency exit ramps" — opportunities to pull over if the vehicle is not performing well. Obviously the switch from planning to production represents a significant turning point and hence requires a ***go/no-go*** decision which should be the result of a senior management review and determination of whether or not to provide the project with further funding.

Several features of the PLC are worth noting here:

- Crossing this planning/production boundary typically signals a major change in pace, change in the organizational structure and change in the numbers and types of skills required.
- How each phase is managed, is heavily dependent on the type of project and its degree of technological uncertainty. For example, the greater the uncertainty, the more the iteration that may be necessary, especially in the planning phase
- The PLC provides a major baseline for all educational, presentation, and practical management purposes

**The Project Life Cycle has a hierarchy**

For practical purposes in managing most projects, the four sequential major phases described on the previous page need to be broken down in greater detail. Thus, each phase may be made up of one or more stages and, for purposes of scheduling the actual work involved, each stage is further developed into a number of activities or tasks. These activities or tasks are clearly specific to the particular project.

However, it is interesting to note that while the activities or task are specific to the project, the selection of appropriate stages is typically specific to the industry, and only the four generic major phases and the principle of plan before doing are applicable to projects generally. Figure 3 shows this hierarchy in tabular form.

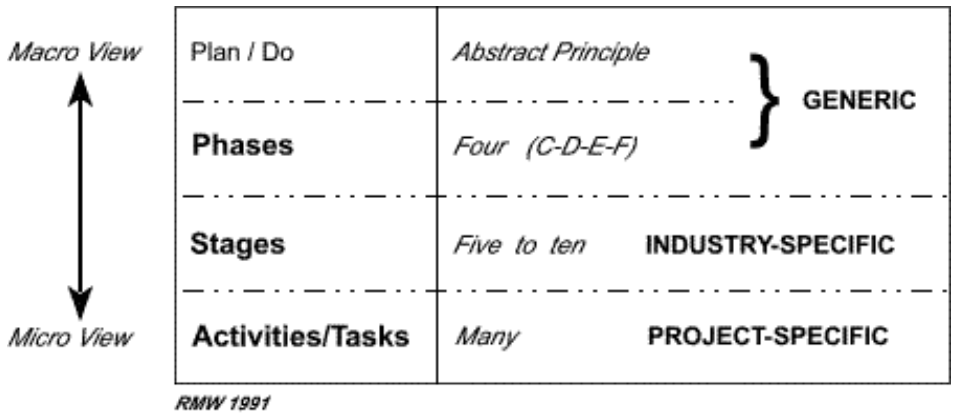


**Figure 3**

We should like to emphasize that project tasks and activities are subsets of project Stages which in turn are subsets of project Phases. These relationships are important because there is often great confusion on this subject in discussions of work breakdown and time management.

The relevance and consistency of the application of project management principles to all levels of this project life cycle hierarchy, from the macro to the micro, is also well worth emphasizing. A specific task can just as well be considered as a "project" (or sub-project) in its own right because it requires exactly the same philosophical considerations and can be tackled in exactly the same way as the project as a whole, albeit on a lesser scale.

Perhaps that is why breaking the project down into manageable work packages is so attractive. It enables the same standard approach to be applied throughout. It is also why some large projects seem to have multiple project managers!

**Some interesting Project Life Cycle Variables**

In our last two pages we discussed PLC and observed the hierarchical nature of its components. In many ways, the things that make project management unique as a discipline can only be displayed in the PLC sequence. Many of the process features of project management exhibit marked and characteristic variation during the course of the PLC, thus making project management more complex and success more difficult to attain. Figure 4 shows two variables which are briefly described as follows.

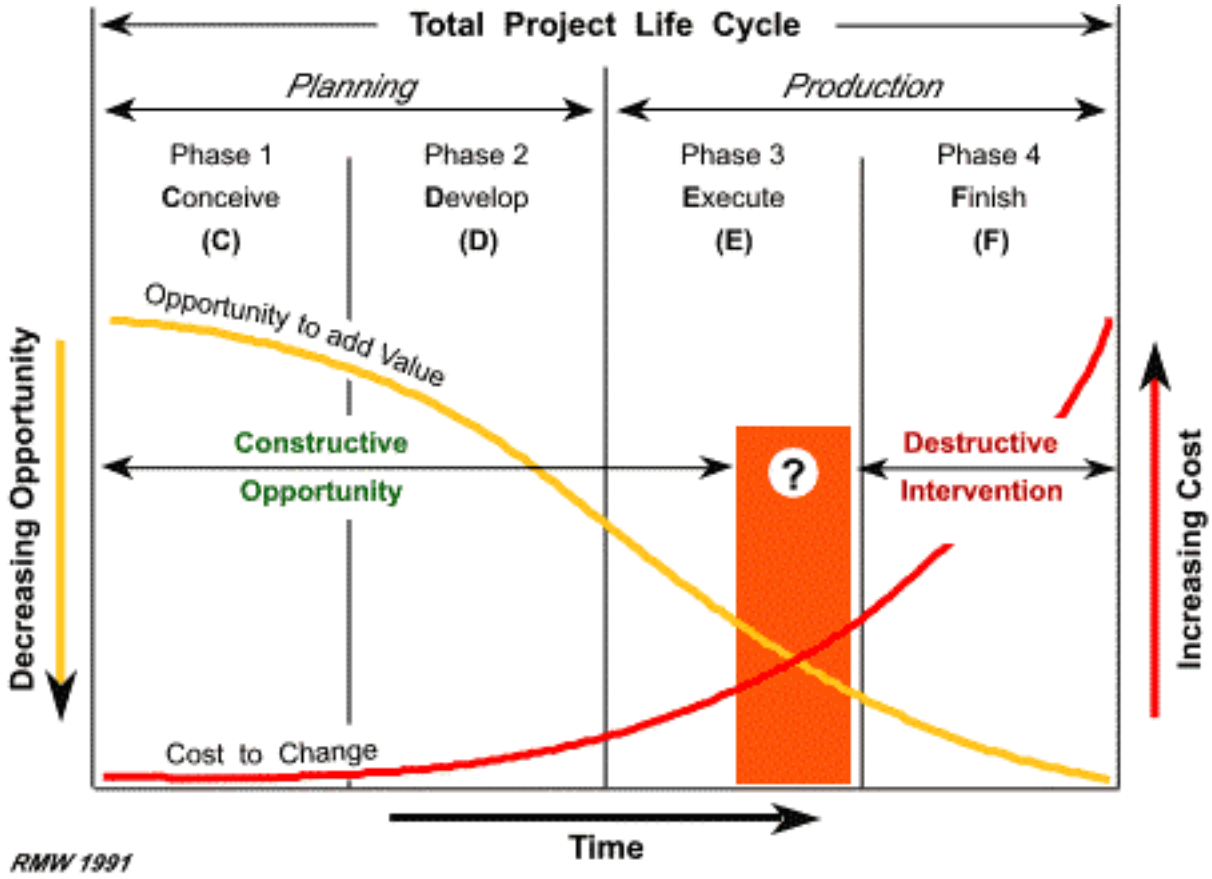


**Figure 4**

***Potential for Adding Value***

The potential for adding value to the products of a project are obviously highest during the conceptual phase of the project and lowest during the finishing phase. Between these two extremes, the curve tends to follow a reverse "S" curve as shown in the figure.

***Escalating Cost to Change or Fix***

Conversely, the cost of making changes is lowest in the planning phases, but rises more and more steeply as the project progresses through the two production phases. In construction, for example, it has been suggested that the cost to make a change, or fix a non-conformance, increases by ten times through each succeeding major phase.

***Adding Value vs. Cost to Change***

If the Cost-to-Change curve is considered in conjunction with that of Adding-Value, the implications to management decision making become readily apparent. The intersection of the two curves probably represents the point at which a change in scope changes from a constructive opportunity into a destructive intervention.

On this issue, Boznak makes a powerful argument in favor of complete and early planning to eliminate later changes. In drawing a comparison between North American and Japanese practice he stated[7]:

"Japanese manufacturers achieve project control much earlier than U.S. manufacturers. In fact, the U.S. (approach) corresponds with the...philosophy ingrained in many of today's largest companies 'We'll know it when we see it.' A significant advantage of early project control is that it creates a *plateau of stability* to facilitate productivity improvements...(and earlier delivery)...When projects are not well managed, assigned resources have a difficult time establishing their work priorities. As a result, program instability is subconsciously factored into functional estimates...."

**Enter the Tetrad Trade-off**

Earlier we identified scope, quality, time and cost as the four core target functions of project management (as viewed by a project sponsor) or constraints (as viewed by the project manager). In practice, however, project circumstances often prevail wherein these objectives or constraints may not all be feasible or mutually compatible. This is especially true when considerations of risk and uncertainty come into play.

Moreover, the nature of some projects may be driven more by one constraint than another. For example, a software product must work well for a customer base to be retained. Therefore scope functionality and quality will be paramount over time and perhaps cost. Conversely, an exhibition will have a fixed opening day so that the scope of the exhibition may have to be sacrificed to this deadline. Consequently, in the course of managing the project process, the project manager and his or her team must choose options and make decisions according to the appropriate priorities. The relationship of these four parameters can be viewed graphically as a ***Tetrad Trade-off*** as shown in the Figure 5.

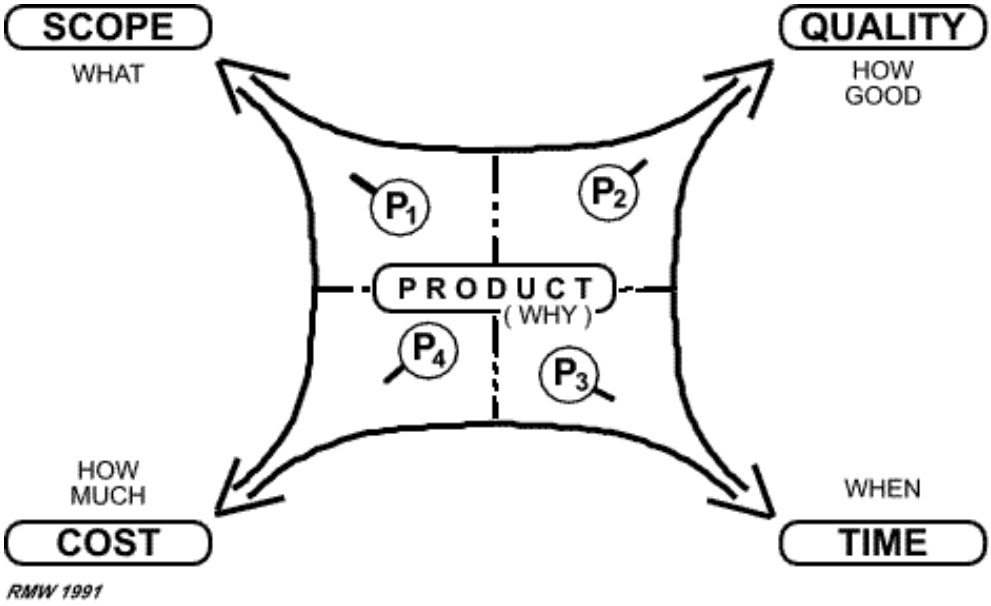


**Figure 5**

Consider four types of projects each one biased towards a different quadrant of the tetrad. The first project, in the scope quadrant, has defining the project scope as its priority (rather than developing a defined scope). Good examples include research and development (R & D) and defense projects. Such projects consequently tend to be very uncertain in terms of quality, time and cost.

In many cases the scope is reasonably well defined, but the emphasis must be on public safety so that quality is paramount. Examples include infrastructure projects, passenger vehicles of all kinds and high-end market products. As we have already suggested, any project with an opening day deadline has time as its fixed constraint. The opening day deadline of a national exposition, or the opening night of a theater production are good examples. Or the emphasis may be on a fixed budget such as appears to be the case in many government-run projects — only to discover too late that in fact scope and safety are paramount!

However, the inexperienced project manager should be cautioned that the priority emphasis for a project may well shift during its life cycle. For example: a project which is scope and quality oriented at the outset may well shift towards cost and schedule towards the end of its life cycle. An illustration of this might be a project which, having experienced cost overruns, is running out of financing. Conversely, a cost and schedule oriented project may well shift towards scope and quality. An illustration of this might be a product launch which needs to be moved "up-market" as a result of new market competition. Typically, this latter shift is difficult to accomplish in retrospect, which emphasizes the importance of sound early project planning and vigilance during definition and implementation.

Managing the Tetrad Trade-off with skill and understanding is a very important part of managing a project. Rarely does a project manager have the luxury of a project which has equally balanced constraints, such that the achievement of all four is entirely feasible!

**Targeting Success**

So far in these pages we have highlighted four core constraining functions and four facilitating functions. But in addition to these eight functional components of project management there is another element, arguably the most important of all and that is the matter of measuring success. Why?

Interest in project management learning stems from a desire to manage projects better, to end up with a project which is more successful. But when is a project successful? Some things can be measured but most are a matter of opinion and that depends on the personal perspective of the viewer. For a favorable opinion to be expressed by those associated with a project and its product, they must first be reasonably satisfied with it. Hence, a successful project is one which has achieved ***stakeholder satisfaction***.

Yes, I know that we have a problem with the word "stakeholder". A stakeholder may be the person who has financed or sponsored the project, or the people who worked on it, or those who will benefit from the product – think of those last as the "customers". Or they may simply be people who are impacted, perhaps adversely, by the project – think of those as the project's ***constituents***. Of course, the cynic might argue that the really successful project is one in which all those involved are about equally dissatisfied!

The biggest problem with measuring success is the common observation that its perception not only varies with who does the perceiving but the point in time at which it is being evaluated. For example, the project team's perceptions of success is always going to be subjected to a certain amount of bias (after all, their jobs may be on the line!)[8] whereas at a later date they may be free to view the project with greater objectivity. Similarly, activists who violently object at the time for political purposes turn their

attention to other opportunities, and constituents simply find that perhaps it is not so bad after all.

In the literature, there are many examples of projects which had monstrous budget and schedule overruns, yet were subsequently considered great commercial successes. Still others meeting the simple cost, schedule and performance criteria proved to be glorious "white elephants". Clearly the old view that project success is comprised of these three elements is no longer an adequate. barometer of true project success. Rather, the differences are more likely to be found in changes in the external environmental conditions, such as changes in the market or in stakeholders and constituents needs and attitudes.

In other words, the products of a project may be only a partial satisfaction of the sponsor's real needs, because they are only part of a larger picture and this picture typically becomes better understood as the project progresses. Figure 6 suggests a view which tries to combine all of these aspects. It suggests internal performance must be balance with external purpose for both project and product to be successful.

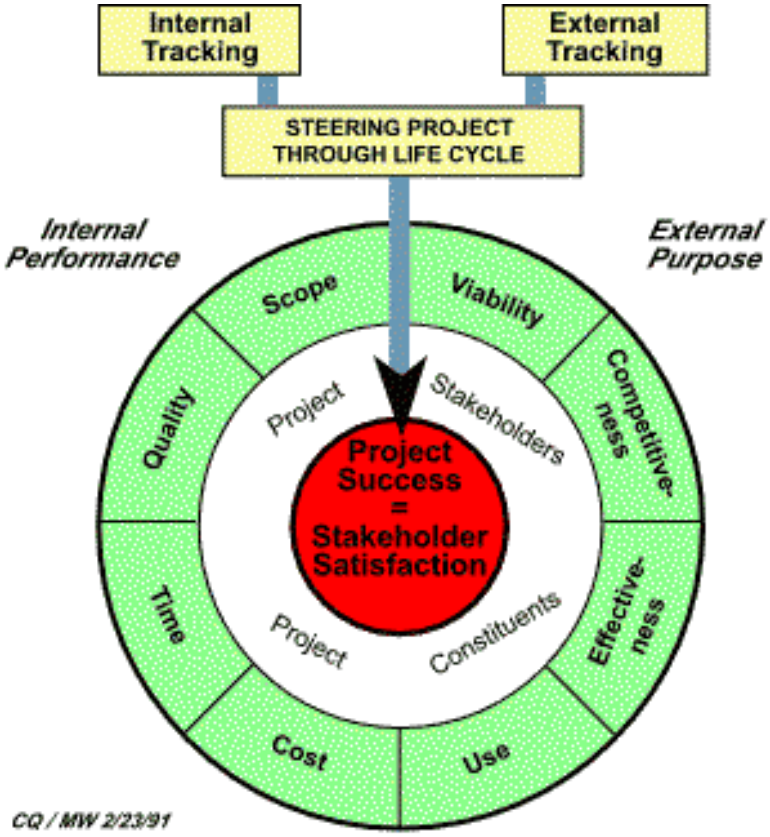


**Figure 6**

The moral is: ***Doing the wrong thing right is never a success, but doing the right thing even half right could still be a winner!***

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[1] From original notes assembled to author A Framework for Project and Program Management Integration, Project Management Institute, 1991

[2] Abstracted from T. Cooke-Davies, Return of the Project Managers, Management Today, BIM, UK, May 1990

[3] Agreement between the Project Management Institute and the International Project Management Association dated October 16,1990, p3
[4] A. S. Humphreys, Business Planning and Development Inc., BIM (UK) Report, June 1986, p81
[5] D. I. Cleland, Project Management: Strategic Design and Implementation, Tab Books, Inc., PA, 1990, p53
[6] P. Nunn, PMJ, Aug. 1986, p105-108
[7] R. G. Boznak, Project Management Journal, September 1991, p13.
[8] J. Pinto, Summary provided in letter dated June 5, 1989