

4

The strategic management of projects

4.1 Introduction

I now turn to the third element of the project's context, the development of a strategy for the management of the project. The way one approaches a project determines how successful it will be. In Section 1.3, I indicated that time spent planning a project is time well spent, yet people consistently spend too little time in the early stages of a project, failing to consider adequately the range of issues which will subsequently cause problems. Managers of projects need to think at an early stage about what will influence the success of their projects, and to manage all the internal, external and strategic factors that will deliver that success. Figure 4.1 shows a model for the strategic management of projects developed from that originally proposed by Morris.^{1,2} Projects are subjected to seven forces:

External context: Two forces are imposed by the external context, as described in the previous two chapters:

- sponsorship and schedule: the finance provided by the owner, the benefit expected in return, and the time scale which makes that benefit worth while, and will repay the finance
- external influences: the political, economic, social, technical, legal and environmental influences of and on the parties involved.

Project strategy: Two forces arise from within the parent organization, from the strategic importance given to the project, and the strategy for undertaking it:

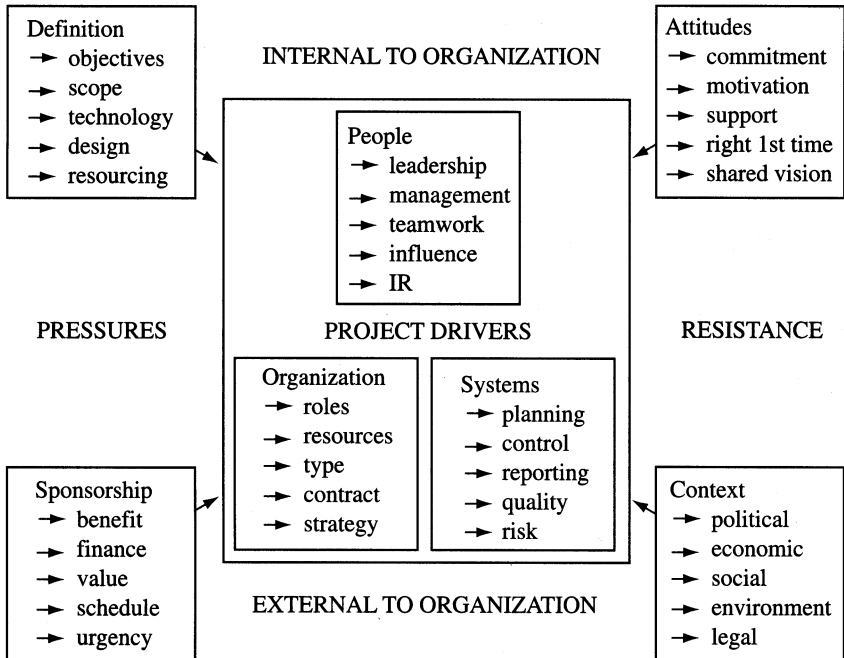


Figure 4.1 The seven forces model of project-based management

- attitudes: representing the importance attached to the project and the support given from all strata of management, from the leaders to the followers
- definition: what the project is required to do, the approach to its design and technology expected to deliver it.

Internal implementation: Three driving forces come from within the project:

- people: their management, leadership, teamwork and industrial relations
- systems: of planning, reporting and control, by which progress will be measured and managed
- organization: the roles, responsibilities and contractual relationships between the parties involved.

This model is expanded in Section 4.4. In the next two sections, I discuss how we judge projects to be successful, and the pitfalls to achieving that success. It is important to know how a project will be judged successful before choosing a strategy for its implementation. I close this chapter by

describing five principles of good project management on which the approach described in this book is based.

4.2 Judging project success

Research has shown that if a project manager, his or her team and other stakeholders agree before they start how they are going to judge the project's success, then they maximize their chance of success.^{3,4} If they do not, then they maximize the chance that the people involved will use the project to achieve their own covert objectives. There is the standard mantra of many traditional project managers that projects are about achieving time, cost and quality (Section 1.3). At best this is far too simplistic, and at worst it is positively detrimental to good project management. There is an apocryphal story about research conducted in Australia into how projects were perceived five years after completion. All the projects completed to time, cost and specification were five years later perceived to be failures. The implication is that in the drive for time, cost and specification, the project team sacrificed functionality and the product of the project had proved less than useful. When you challenge traditional project managers about their mantra, they will often extend the definition of quality to mean almost anything, but that misses the point, as it does not provide adequate guidance to project teams. Example 4.1 describes a project I worked on where completing early left us feeling dissatisfied, whereas finishing late, but having had the chance to prove our great management skill would have been more satisfying.

In the early 1980s, I worked as a maintenance engineer on four ammonia plants in the north-east of England. Every six months we closed a plant for biennial refit. Over a period of four weeks we did 100 000 man-hours of work. We planned the overhauls to within four hours, but we were usually two days late. But we were *only* two days late. We pulled out all the stops, and managed our way through all the problems to deliver the project within two days of target. Once we coasted in four hours early, and felt we had failed. If we had been given a tighter target, we could have really proved ourselves and achieved a shorter duration! That overhaul did not fulfil our need to prove ourselves as managers.

Example 4.1 Completing projects on time

A project is undertaken to deliver a facility, which in turn produces a product. The owner is primarily interested in the benefit the product brings, although to be of value it has to be available within a certain time and for a certain price, and meet certain quality standards. Time, cost and quality are

constraints which affect the owner's judgement, but are not their primary concern. The contractor, on the other hand, wants to complete the project on time in order to be paid, within budget in order to make a profit, and to specification so that the owner will accept the facility and pay the contractor. The actual people involved in the project may also have a host of covert objectives which will cloud their judgement, regardless of the outcomes above (Section 3.2). Morris and Hough² reviewed performance on eight major projects from the 1960s, 1970s and 1980s, and derived four criteria for success: the project delivers its functionality; it is on time, to cost, to quality; it is profitable for the contractor; and if necessary, it is terminated early. They judged their eight case studies against these, and found again that subjective perceptions can cloud the judgement. In particular:

- the Fulmar Oil Field in the North Sea was late, but extremely profitable for the owner, so was judged to be successful
- the Thames Barrier was late and overspent, and was quite poorly managed in its early stages, but it works, is a tourist attraction and made a profit for most of the contractors, so is judged a success
- Concorde was late and overspent, but was a technical success, gave France an aerospace industry, and contributed to Britain's entry to the EU, so is judged to be successful
- Heysham II Nuclear Power Station was well managed, and nearly on time and budget, but the judgement is clouded by the rest of Britain's nuclear power programme, and the public's perception of the nuclear industry, so it is judged to be unsuccessful.

These projects were major infrastructure projects. The benefits were social good, not financial return. Morris and Hough therefore only say that a project should achieve its functionality, not that it should provide a profit. For all projects, I would propose a more extensive list for judging success:

- it achieves its stated business purpose
- it provides satisfactory benefit to the owner
- it satisfies the needs of the owner, users and stakeholders
- it meets its prestated objectives to produce the facility
- the facility is produced to specification, within budget and on time
- the project satisfies the needs of the project team and supporters
- it makes a profit for them.

There are several interesting points. First, most of the criteria are subjective; only time and cost are objective. Secondly, the judgement is affected by the assessor's covert objectives. Thirdly, the measures are not necessarily compatible, so the judgement depends on a complex balance. However, they are not mutually exclusive, so it is possible to satisfy them

together, but you must start with that objective, and through the strategy for implementation negotiate the balance. You cannot force them to be compatible at the end of the project. Finally, the measures are not judged simultaneously. The first two can only be judged after the facility has been commissioned, and the product obtained. Sometimes that is many years after completion of the project. The Thames Barrier is awaiting the first major flood, and the public image of Concorde has improved with time. The next three are judged on completion of the project, as the facility is commissioned, and the last occurs throughout the project.

Wateridge³ distributed a questionnaire to people working on IS projects asking them their role on projects (sponsor, user, analyst or project manager) and asked them to think of two projects they had worked on, to say whether those projects were successful or not, and against what criteria they judged that. He found that on successful projects, all four groups could agree the success criteria, that it should provide value for the sponsor. On unsuccessful projects:

- the sponsor wanted to make a profit
- the users wanted the functionality they first thought of
- the analysts wanted to design a clever solution
- and the managers wanted to finish on cost and time.

It is amazing that on successful projects people are working to the same end, and on unsuccessful projects they are tearing themselves apart. It is sad that on unsuccessful projects what people are focusing on is important, to make a profit: to have good functionality, to have a well-designed solution, and to finish on cost and time. However, there seems to be a way of working together, each achieving what is important to you, but oriented towards the common good, and another way of working (I will not say together), where you achieve what is important to you, but undermine the other project participants. Optimizing the common objectives does not necessarily optimize the individual objectives, and vice versa. I have had project managers say to me that in their annual appraisal they are judged on how many of their projects finished on cost and time, not on how many made a profit for the owner. They therefore ask me whether I am saying that the appraisal system works against successful project management, and I have to say that unfortunately it seems to.

Hartman⁴ suggests that during the start-up process you ask the project team the three questions:

- Q1: What will the project team deliver on the last day of the project?
- Q2: How will the successful achievement of that be judged?
- Q3: Who gets to vote on questions 1 and 2?

Hartman describes running start-up workshops with each of two companies, where the project teams gave contrary answers to his three questions.

The first project was the construction of a petrochemical complex in Alberta. There were two project managers, one for the design stage of the project and the other for construction. In response to question 1, one said the project was over at mechanical and electrical completion, and the other when the plant delivered 100 per cent nameplate capacity, two dates 15 months apart, and yet both gave the same completion date.

The other team were implementing replacement accounting software for their organization. About 30 people attended the workshop, and in response to the first question answers ranged from:

- beta test successfully completed
- the system has run for twelve months without fault
- 30 people have been made redundant.

The first two of these are again at least 15 months apart. The third was unfortunate because some of the people in the room were those to be made redundant and this was the first they had heard of it.

The teams probably blamed the failure of their projects on circumstances beyond their control, saying 'We were unlucky'.

Example 4.2 Failure to agree completion criteria

Hartman describes examples of the failure to reach agreement on these (Example 4.2). In Chapter 11, I describe how to build these questions into the start-up process, and in Chapter 16 I give a Project Health Check, which asks whether or not this agreement has been reached, and suggests to the people completing the questionnaire possible measures of success to reach this agreement.

4.3 Pitfalls of project management

This view of success is the basis for the implementation strategy (Section 4.4). First I describe pitfalls which threaten successful implementation. Pitfalls are not risks in the work itself (Chapter 10), but are management mistakes made by project managers. They occur in the way the project is established, or the way it is planned, organized, implemented or controlled. The following pitfalls were observed by Grude,⁵ from his experience as managing director of a firm of software engineers.

Pitfalls in establishing the project

The pitfalls in the way the project is set up within the parent organization include:

PROJECT PLANS ARE NOT ALIGNED WITH BUSINESS PLANS

Project plans must be derived from the business plans (see Example 2.1). This pitfall often arises by starting with detail planning, and is the one pitfall which will usually cause a project to fail.

PROCEDURES FOR MANAGING PROJECTS ARE NOT DEFINED

Projects use transient teams to undertake novel assignments. The teams form quickly in order to undertake the task successfully. A properly structured start-up process is therefore important (Chapter 11). A consistent, company-wide approach to project management can also help. However, it is necessary to obtain a balance between the need for such an approach and the need to respect the individuality of project types (Chapters 14 and 15).

PRIORITIES ARE NOT COMMUNICATED TO PARTIES INVOLVED

Example 2.5 describes what can happen when priorities are not communicated. People assign their own, usually different, priorities, with the result that there is no coordination and no work is done.

THERE IS NO SHARED VISION

Shared vision can be a powerful motivator and a way of building commitment to the project and its objectives. We saw in Section 3.4 how it is essential to stable government, and to effective project management.

Pitfalls in planning

The pitfalls in the way the work is defined, the time and cost schedules calculated, and communicated to the project team include:

PROJECT PLANS DEVELOPED ON A SINGLE LEVEL

The use of breakdown structure is how we ensure the work delivers the required benefit. The usual pitfall is to plan at a detailed level only; computer software unfortunately encourages this. Sometimes work is planned only at a very high level, and there is no coordination. The following Chinese proverb illustrates that in almost every area of human endeavour work is planned on many levels. Projects should be no different:

A journey of a thousand miles begins with a single step. (Mao Tse-Tung)

On a journey there are at least two levels of planning between the end objective and the steps: the milestones (towns and villages) and the route map (roads). The former is the strategic plan, comprising intermediate goals or products, and the latter the tactical plan. At the milestone level, we make our plan robust but flexible, providing key, fixed points for measuring progress

towards our objective, but able to incorporate changes at a lower level without changing the milestone definition. The road map we also try to keep fixed. However, there are two ways we can build in flexibility. If we find the route blocked, we can make a detour, but still aim to reach the next milestone. Sometimes the detour is better than our original route, but changes are contained at a low level. We can also adopt *rolling-wave planning*: we do not need to define the route between the last two towns until we reach the penultimate town. Sometimes we cannot get that information until we get there. All we need to estimate is the distance between the towns to plan the time and cost of the journey. The single steps are planned as we progress.

USING CUMBERSOME TOOLS

The complexity of project planning tools has grown over the last 30 years, due to the increasing power of software. However, at best, complex plans achieve nothing, at worst, they confuse the situation (see Example 4.3). The plans and progress reports should be cascaded through WBS (Figure 1.10). This can help build the vision for the project.

A delegate on a project management course at Henley Management College said that he had three people on his project team of 20 who spent all day every day developing plans on a well-known PC-based package, and he got no useful information out. Thus 15 per cent of his team were contributing nothing!

Example 4.3 Cumbersome, unfriendly tools

One reason why detail planning tools have developed is they were used so successfully on the Polaris Project in the USA in the 1950s. There is no doubt that PERT (the programme evaluation and review technique), which was first developed on the project, was a powerful analytical tool which helped identify and eliminate risk, and so remove two years from an eight-year schedule. The project manager was also very charismatic and used the technique to help build the vision for the project.⁶ However, the following quotation illustrates a covert use of the technique:

These procedures were valuable in selling the importance of the mission. More importantly, the PERT charts and the rest of the gibberish let us build a fence to keep the rest of the Navy out and get across the message that we were the top managers.⁶

Complex plans were deliberately used to confuse outsiders getting too closely involved in the project, and thereby protecting the project team from interference. This is a valid use of complex plans, but you also need to maintain the simple plans, or you will also confuse yourself.

CREATIVITY DISCOURAGED

It is the reality of modern projects that the project manager cannot be an expert in all areas of a project. Yet it is not uncommon to see project managers dictating to people more expert than themselves through the plan, telling them how to do their jobs. This can demotivate the experts, and isolate them from the project. What the project manager should do is delegate elements of the strategic plan to the experts, telling them which milestones they are responsible for, by when and at what cost, but allowing them to determine the best method of achieving that. In this way, they can retain their integrity, while meeting the project's goals.

UNREALISTIC ESTIMATES

There are several causes of unrealistic estimates. It is common when preparing an estimate, to believe that the owner may not accept them and reduce them. Inevitably the work turns out as originally estimated, resulting in perceived failure. Secondly, there may be inadequate historical data to estimate the work accurately. In that case, the risk must be identified, and an appropriate contingency added. Thirdly, people have different abilities. You must plan for the people you have, not some unobtainable ideal. Finally, it is sometimes assumed that project personnel are able to work 260 days (2080 man-hours), a year. A person working full time on a project is available much less than that. Lost time is caused by holidays, bank holidays, sickness, training, group meetings, etc. When planning, this lost time must be accounted for (Chapters 6 and 9).

Pitfalls in organizing and implementing

The pitfalls in building the project organization and assigning work to people include:

LACK OF COOPERATION

It is not uncommon on projects to wonder if you all work for the same organization, as covert objectives get in the way of the overt objectives. Cooperation is achieved in two ways: by building a clear vision for the project and by negotiating agreement to the plans (Chapter 3).

RESOURCE PROVIDERS NOT COMMITTED

Project managers often use resources on secondment from other managers. They will not willingly release their resources if they are not committed to the project.

RESOURCES NOT AVAILABLE WHEN REQUIRED

It is not adequate just to send the resource providers a plan and expect their people to be available at some point. Even if they are committed, you must

ensure they understand the requirements. This is helped by using simple plans, by discussing the requirements of the plan with the resource provider, and by negotiating their release. They must also plan to release their resources at the required time.

MANAGEMENT RESPONSIBILITY NOT DEFINED

When defining roles on projects, it is common to consider only those people who do work, cutting metal or writing code. However, people have other roles which consume time or can delay the project. These tend to be management roles, especially those which cause delay. These roles include taking decisions, managing information, and managing progress.

POOR COMMUNICATION

Surprisingly, poor communication on projects is often caused by too much rather than too little. Communication out of a project is often achieved by sending every piece of information to everyone involved. People soon learn that only a few documents are relevant to them, so all go straight in the bin. The project manager must define those who need the information, so that when people receive something they know they ought to read it. If some other person wishes to be included in the circulation, that can be negotiated. Similarly, committees are often used for communication into a project. Once invited people tend to stay on the committee, even if they are no longer required. Committees grow organically. Worse still, it is those people who have least to contribute who do most of the talking at meetings, as they talk to justify their presence. Channels of communication into a project must be clearly defined and limited, and any additions discussed and negotiated.

TECHNICAL VS PROJECT MANAGEMENT

One reason why construction of the Thames Barrier was poorly managed in the early stages was that there was no integrative project management.² The 'project managers' were primarily technical managers, with responsibility for managing the design. There was little integration of the work in the modern sense of project management. It is still common to hear design managers refer to themselves as project managers, especially on IS projects. Often, these 'project managers' are not good at delegating work. They believe, quite rightly, they can do the work better than anyone else, and so surround themselves with idle people while they work themselves into an early grave. It is my view that an industry has truly matured in the management of projects when they stop calling design managers 'project managers', and stop using design engineers as such.

Pitfalls in Control

Finally, pitfalls in monitoring and control are illustrated by Example 4.4 and include:

I once audited a project where the manager felt he had lost control, but was unsure why. The project was to put on a trade exhibition to be held in Birmingham in December of one year. There were 15 syndicates of four companies collaborating in this exhibition. Work started in June. Each syndicate prepared their own material, bringing it to a test site in September, moving it to Birmingham in late November. The project manager was a contractor. In June he had a meeting with the representative of each syndicate, showed them his plan, and said if the syndicate had any problems with the plan to let him know. That was his first and second mistakes: he dictated to the experts by telling them his plan, not developing a plan with them, and no comment was interpreted as agreement. The project manager then held weekly meetings attended by the representatives at which they gave verbal progress reports. Each person spoke for about 15 minutes, resulting in a four-hour meeting; but the project had been set up in such a way that they were not interested in what each other was saying. The whole point of dividing the project into 15 syndicates was each syndicate could work on its own in the early stages. Each meeting therefore consumed 64 man-hours to no effect. At each meeting the representatives usually reported that everything was going to plan. I was called in mid-September because, in spite of that, materials were not arriving at the test site at the due time. The manager wondered what was going on. What had happened was that after the first meeting most of the syndicates had ignored the project manager's plan and worked to their own. When they said things were going according to plan, they meant their own, but the project manager assumed they meant his, and the two bore no relation.

Example 4.4 Pitfalls in control

THE PURPOSE OF CONTROL IS NOT UNDERSTOOD

The purpose of control is not to hold meetings or talk about progress. The purpose is to monitor progress, to compare progress to the plan and to take necessary action to achieve the project's goals. This may mean continuing to follow the existing plan, revising the plan, or revising the goals.

PROGRESS IS NOT MONITORED AGAINST THE PLAN

Control will only be effective if there is a common basis for control, which means a common plan. This is achieved most effectively by reporting progress on a copy of the plan.

INEFFECTIVE REVIEW MEETINGS

In order to be effective formal review meetings must be held, with controlled attendance; fixed criteria for reporting; and at fixed intervals.

Discussing progress at the coffee machine may be part of good leadership and team building, but not of good control. At the other extreme, large meetings where most people are not interested in what others are saying waste time. People must only be invited if they have something to contribute. Holding review meetings at two or more levels of the planning hierarchy can aid this. (The manager in Example 4.4 should have had weekly meetings with the representatives individually, and less frequent meetings with the whole group to discuss common issues.) The meetings must have a fixed agenda, which means reporting against fixed criteria, including the plan. Without a structure people will report progress in a way which puts them in the best light. Finally, people sometimes hold meetings only when they have something to discuss. By then control is reduced to damage limitation. Meetings must be held at fixed intervals, although the frequency may vary depending on the risk, and the point in the project life cycle.

RESPONSIBILITY WITHOUT AUTHORITY

This is an impossible position for any manager. The manager in Example 4.4 had no direct authority over the syndicates, and was not able to use other sources, including that obtained by negotiating agreements. Without authority for control, the manager cannot take action to achieve the project's goals.

4.4 The strategic management model^a

Youker's model (Figure 1.10) implied that to achieve objectives at any level requires a strategy, and the project objectives are no different. In Section 4.1, I introduced the model for the strategic management of projects adapted from that developed by Morris.^{1,2} A project is subjected to seven forces or pressures, each of which must be managed.

The external context and strategy of the parent organization

The strategy of the parent organizations and for the external context imposes two forces.

SPONSORSHIP AND SCHEDULE

The project cannot begin without finance, and that will only be forthcoming if the owner expects adequate benefit from the project (Chapter 2). Finance is the largest item of project expenditure,⁷ and influences all other areas of project strategy. Much of the project definition will be driven by the available sources of finance, the financiers wishing to minimize risk, especially in the choice of technology. Where significant amounts of money

are raised externally, a certain amount of boot strapping may be required, where some tasks cannot be completed until some money is raised, but must be completed before more money is raised. This was implied by the base version of the life cycle (Figure 1.5).

A key parameter in a project's viability can be the completion date, with even a small slippage leading to a significant loss of revenue as well as increased financing charges. Determining the overall timing of the endeavour is crucial to calculating the risks and dynamics of its management. How much time is available for each stage, together with the amount and difficulty of the work to be accomplished, influences the nature of the task to be managed. Therefore, in specifying the project, the manager should ensure that the right amount of time is spent within the overall duration. Milestone scheduling is crucial at the earliest stage. It is important that the development stage is not rushed or glossed over (a fault that has caused many project catastrophes in the past).

A degree of urgency should be built into a project, but too much can create instability. The manager should avoid beginning implementation before technology development and testing are complete. This situation is known as *concurrency*. (Concurrency is sometimes employed quite deliberately to get a project completed under exceptionally urgent conditions, but it often brings major problems in redesign and reworking.) Concurrency is now increasingly synonymous with *fast track*: that is, building before design is complete. If faced with this, be under no illusion as to the risk. Analyse the risk rigorously, work element by work element, milestone by milestone. The term *fast build* is now being used to distinguish a different form of design and construction overlap: that where the concept, or scheme, design is completed, but the work packages are priced, programmed and built sequentially, within the overall design parameters, with strict change (configuration) control being exercised throughout. With the use of fast build, the design is secure and the risks are much less.

EXTERNAL INFLUENCES

External influences are a primary cause of many project overruns.² The analysis of these factors is often called *PESTLE Analysis*, the factors being political, economic, social, technical, legal and environmental in nature. It may be asked how much management can influence these factors. Often some influence can be exerted, if only to provide some protective action or contingency.

Most projects raise political issues and, hence, require political support. These issues must be considered from the outset. People working on a project must be attuned to political issues and be ready to manage them. To be successful, project managers must manage upwards and outwards, as

well as downwards and inwards.⁸ The project manager should court the politicians and influential managers, helping allies by providing information needed to champion their programme. Adversaries should be coopted, not ignored.

Stakeholders, especially the local community, are an important external influence. The management of change must take account of this influence, and so techniques such as the environmental impact analysis (EIA) procedure have now been adopted.⁷ This process shows how dialogue can help reduce potential opposition. The value of the EIA process is that it allows consultation between developers, the community, regulators and others, and yet forces time to be spent at the 'front end' in examining options and ensuring that the project appears viable. Thus, the likelihood of community opposition and of unforeseen external shocks arising is diminished. Furthermore, in forcing project developers to spend time planning, the EIA process emphasizes precisely that project stage which traditionally was rushed, in spite of the obvious dangers.

The parent organization

Two influences arise from within the parent organization, and the strategy of the programme of which the project is a part.

PROJECT DEFINITION

The development of the project's definition is vital to its success. A comprehensive definition should be developed from the start, stating its purpose, ownership, technology, cost, schedule, duration, financing, sales and marketing, and resource requirements. If this is not done, key issues essential to the viability of the project may be omitted or given inadequate attention, resulting in poor performance later on. Through the project definition, the vision for the project is created, the purpose of the project is defined, the project plans are aligned with the business plans and the basis of cooperation agreed. Project definition is described in Chapter 11, and is achieved by:

- setting the project's objectives
- defining the scope through a strategic, or milestone, plan
- setting the functional strategies and assessing technical risk
- carefully managing the design process
- managing resources and the context.

Setting objectives: Little can be done until clear, unambiguous objectives have been set for the project. I have shown how a project's success can be compromised by objectives that are unclear, do not mesh with longer term strategies and are not clearly communicated and agreed.

Defining the scope: Scope definition, and cost, time and performance criteria are intimately related. If they are unrealistic, expectations for the project will not be met and it will be said to 'fail'. The strategic plan for attaining the project's objectives must also be developed in a comprehensive manner from the start. If the project objectives change, the scope definition and investment criteria must be reconsidered.

Setting functional strategies: The setting of a project's functional strategies must be handled with great care, and requires the determination of the design, the technology to be used, the method of its implementation and eventual operation best suited to achieving the objectives. The design standards selected will affect the difficulty of construction and eventual operation of the plant. Technical risk in particular needs to be assessed. Technical problems can have a huge impact on the likelihood of project overrun.²

Managing the design process: No design is ever complete; technology is always improving. A key challenge is to achieve a balance between meeting the schedule and making the design that bit better. Central to modern project management is the orderly progression of the design and its technical basis through a sequence of review stages. At each stage, the level of detail is refined, with strict control of technical interfaces and changes (through 'Configuration Management', Chapter 7). Changes can result in extensive rework, as people on other parts of the project may have based their assumptions on the agreed design. You should therefore aim to achieve a progressive design freeze as soon as possible. This is usually feasible in traditional engineering projects, but an early design freeze may conflict with meeting the customer's requirements (see Chapter 7), especially in organizational development, high technology and information systems projects. In setting up projects, care should be taken to appraise technical risk, prove new technologies, and validate the project design, before freezing the design and moving into implementation. The management of the design process is described in Chapter 11 and its application in concurrent engineering and information technology projects in Chapter 18.

Resources: It is no good defining what you want to achieve if you do not have the right number of good, committed people, sufficient money, adequate infrastructure, etc. In fact, getting adequate resources, managing them well and ensuring that the context is supportive are at the heart of successful strategic management, yet are rarely addressed by the literature on strategy. I cover resources under both the project's internal organization and its external context, in Chapters 6 and 3 respectively.

ATTITUDES

This is probably the most important force. The chances of success are substantially diminished unless:

- there is a major commitment to making the project a success
- the motivation of everyone working on the project is high
- attitudes are supportive and positive.

To achieve positive attitudes it is vital to develop a clear vision or mission by linking project's plans to business plans and by functional and task managers being seen to cooperate to achieve the same objectives. It is particularly important that the project receive visible commitment and support from the top; without which it is probably doomed. (The study of the Advanced Passenger Train² illustrated this clearly.) However, while commitment is important, it must be towards viable ends. Great leaders can become great dictators. If sensible projects are to be initiated, they must not be insulated from criticism. Critique the project at the specification stage, and ensure that it continues to receive frank reviews as it develops.

Internal implementation

The third set of forces or drivers arise from the internal implementation:

PEOPLE ISSUES

Projects usually demand extraordinary effort from the people working on them (often for modest reward, and with the prospect of working oneself out of a job). In Chapter 3, we saw how significant institutional resistance must be overcome in order for the factors listed here to be achieved. This puts enormous demands on the qualities of those working on the project, from senior management through the professional teams to artisans. The initial stages of a project may require considerable leadership and championing to get started. Beware though of unchecked champions and leaders: of the hype and optimism which too often surrounds projects in their early stages. The sponsor must be responsible for providing the objective check on the feasibility. The sponsor might be considered as the person providing the business case and the resources. Evidently they ought to be convinced of the merits of the project on as objective a basis as possible. The project champion, however, is by definition someone who is promoting the project: pushing it, and hence being less objective than the sponsor.

We should recognize the importance of team working, of handling the conflicts which arise on projects positively and of good communications. Consideration should be given to formal start-up sessions at the beginning of a team's work, mixing planning with team building (Chapter 11). The

composition of the team should be looked at from a social angle as well as from the technical one: people play social roles on teams, and these will be required to vary as the project evolves (Chapter 17).

PLANNING AND CONTROL SYSTEMS

Appropriate systems must be used to plan and control all the significant functions, including scope, quality, cost, time, risk and other elements identified as appropriate. Table 1.7 lists many of the tools and techniques used, and Figures 15.1 and 15.2 show how many of the systems interrelate. Plans should be prepared by those technically responsible for their work, and integrated by the Project Support Office (Chapter 14). Initial planning should be at a broad, systems level with detail only being provided where essential, and in general on a rolling-wave basis (Chapter 5). Similarly, cost estimates should be prepared by work breakdown element, detail being provided as appropriate (Chapter 8). Cost control should be in terms of physical progress, and not in terms of invoiced value. Cost should be related to finance, and be assembled into forecast out-turn cost, related both to the forecast actual construction price and to the actual product sales price. All changes to the proposed project baseline, proposed as well as actual, should be monitored extremely carefully. Implementation of systems and procedures should be planned carefully, so that all those working on the project understand them properly. Start-up meetings should develop the systems procedures in outline, and begin substantive planning while simultaneously 'building' the project team (Chapters 11 and 17).

PROJECT ORGANIZATION

There are three organization issues which must be considered at the earliest stages:

- the relevant management structure – project-matrix-functional
- the extent of owner involvement
- the expected use of contractors and contract strategy.

Management structure: A project structure is expensive on resources (Section 3.4.) Many projects begin and end with a functional line structure, but change to a matrix during implementation. In addition, implementing a matrix takes time, and effort must be put into developing the appropriate organizational climate. Assistance from organization behaviour may be considered in adopting a matrix organization. (The issues in selecting a structure are described in Section 6.3.)

Owner involvement: The issue is the extent to which the owner continues to be involved, even after hiring contractors to undertake the work. They

may feel they have a legal or moral responsibility to ensure it is done to a certain standard, or may just want to ensure it is for their own comfort. The dilemma is between not being involved at all, versus constantly tinkering with the design, both frustrating the contractor and adding expense. The balance will depend on the nature of the project. A solution is to schedule milestone review points and limit owner involvement to those reviews.

Use of contractors: Virtually no organization has the skills or resources to undertake all its project work for itself and must therefore buy in goods and services. At a very early stage of project definition it will be necessary to determine the contract and procurement strategy. Indeed, financiers may not lend money without knowing who the suppliers will be, so that they can judge their reliability. So, to an extent that takes us full circle, and completes the discussion on project strategy. The selection of contractors, and contract strategy are beyond the scope of this book.⁷

4.5 Principles of good project management

The remainder of this book focuses on three forces within the strategic model, the definition of the project, the planning and control systems and the organization of the project. I do also consider attitudes and people issues, although they are more widely addressed elsewhere.⁸ The external issues are beyond the scope of this book.⁷ The book describes a process-based approach to the management of projects, as outlined in Chapter 1, first describing the project management functions, the management of scope, organization, quality, cost, time and risk, and then describing the project management process through the life cycle, covering definition, implementation, control and close-out. In order to successfully address the seven forces and avoid the pitfalls, the approach described in this book is based on five principles of good project management:

- manage through a structured breakdown, with single point responsibility
- focus on results: what to achieve not how to do it
- balance results through the breakdown structure
- organize the project by negotiating a contract with the parties involved
- adopt a clear and simple management reporting structure.

Structured breakdown

Almost everything we do in life, we plan over several levels, breaking our understanding down in a structured way. Projects are no different. Using a breakdown structure lets us:

- define and control the scope
- isolate changes
- isolate risk.

By breaking the facility down in a structured way, we can determine the essential components required to achieve our project and business objectives. We then do the work because we know it is going to deliver a result we need, not because it seems like a good idea. By dividing the project up in this way we can ring-fence elements of the work and help to do the same to the changes and risk, as with changes to the journey described in Section 4.3. The breakdown structure is the core of project management and almost all the planning and control systems are based on it.

Hence the project organization is very closely linked to the breakdown structure, and it is common to identify one person or team as being responsible for the successful delivery of each element of work at a given level. A person or team is given *single-point responsibility* for each element of work.

Focus on results

The primary breakdown structure is the *product breakdown structure* (PBS) by which we break the facility up into its components. We plan the project in terms of the results, or *deliverables*, we want to achieve rather than the work to be done. The reason for this is it makes the plan robust but flexible, and because it gives better control of the scope:

1. The plan should be robust or stable, because the definition of the expected results should be stable. If the definition of the results changes substantially, then the project changes. Even where the configuration or specification of the results may be poorly defined (Figure 1.15 and Section 7.4), we can still plan in terms of deliverables, the precise specification of which is yet to be determined. On the other hand, if we plan in terms of the work, the plan can be constantly changing, especially if the goals or methods are poorly understood, in which case the early stages of the project will define the work to be done in the later stages.
2. It gives better control of the scope because we only do work which delivers results we know we need to achieve. Planning in terms of the work, it is possible to define work that seems like a good idea, but which in fact does not deliver useful results.

Balance results through the breakdown structure

The plan at the strategic level can be used to ensure that proper emphasis is given to all areas of work, to balance the levels of ambition for different areas of technical work, and for changes to people, systems and

organization, and to ensure they are appropriate to the project's purpose. I showed in Chapter 3 how the team's attention can focus on the technical work. A balance must be achieved through the strategic plan.

Organize the project by negotiating a contract

Nobody is altruistic; nobody does something for nothing. People will only work on your project because they expect some benefit in return. The expected benefit can take several forms, positive returns or absence of negative returns:

- the project may contribute to the success of the organization for which you all work
- working on the project may be the person's job, and if they do not they will not get their annual bonus
- they may like and respect you, and expect that if they contribute to your project, you will contribute to theirs.

Whatever the expected benefit, in asking for someone's contribution to your project you must negotiate their contribution, which means:

- you must trade their inputs against expected benefits, as just discussed
- the agreement must be reached through open discussion
- the agreements must be represented through clear, simple, open, visible plans which represent the expected contribution and the promised returns.

It is not uncommon for project managers to plan their projects on their own and then to tell the project team what they are expected to do. However, a contract is not agreed by one party telling the other party the answer; it is agreed through discussion and trading of positions. It must be the same with the project plan. This also allows the project team to contribute their ideas, and the experts to retain their integrity by determining how they will achieve the milestones for which they are responsible. I describe group planning in Chapters 5, 6 and 11.

Clear and simple reporting structure

The plans must also be clear and simple so that the project team members can see precisely what their contribution is and how that contributes to the objectives of the parent organization. Complex plans confuse (see the quote in Section 4.3), and confuse the project team as much as they confuse the outside world. You need to adopt a simple reporting process, with single page reporting at each level of breakdown:

- you try to represent the project objectives and the business purpose on a single page

- you develop a single page strategic, or milestone plan, representing the overall approach to the project through one to two dozen milestones
- for each milestone you develop a list of activities, showing how that milestone is going to be achieved.

4.6 Summary

1. There are seven forces defining the strategy for the successful management of projects:
 - the sponsorship, benefit and schedule expected by the owner
 - external issues, including political, economic, social, technical, legal and environmental issues
 - the attitudes within the parent organization
 - the definition of the project
 - the people working on the project
 - the management systems used to manage the project
 - the project organization.
2. The criteria for judging success of a project are:
 - it achieves its stated business purpose
 - it provides satisfactory benefit to the owner
 - it satisfies the needs of the owner, users and stakeholders
 - it meets its prestated objectives to produce the facility
 - the facility is produced to quality, cost and time
 - the project satisfies the project team and supporters
 - it makes a profit for the contractor.
3. Pitfalls in establishing the project include:
 - project plans are not aligned with the business plans
 - procedures for managing the project are not defined
 - project priorities are not communicated
 - there is no shared vision.
4. Pitfalls in planning the project include:
 - using cumbersome, unfriendly tools
 - discouraging creativity
 - estimating unrealistically.
5. Pitfalls in organizing the project include:
 - lack of cooperation
 - resource providers uncommitted
 - resources unavailable when required
 - unclear management responsibility
 - poor communication
 - technical management rather than project management.

6. Pitfalls in controlling the project include:
 - the project members do not understand the purpose of control
 - the plans and progress reports are not integrated
 - the review process is not formalized
 - the project manager has responsibility but no authority.
7. The approach to project management followed in this book is based on five principles:
 - manage through a structured breakdown
 - focus on results
 - balance results
 - organize a contract between parties involved
 - keep it simple.

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Note

- a. Section 4.4 incorporates material from the first edition based on a contribution originally made by Professor Peter Morris of UMIST.