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14 Programme management

14.1 Introduction

There has been an overriding assumption in the last two parts of this book that we were considering a project in isolation. The reality is that the vast majority of projects may take place as part of a programme, or portfolio, of projects. The traditional project management assumption is of the large, isolated project with a dedicated team, in which:

- they deliver well-defined, independent objectives, which provide the full benefit on their own
- they are relatively independent of other projects and operations, with a few minor interfaces
- they have a dedicated team, wholly within the control of the project manager; the manager may desire a larger team, but he or she sets the priorities for the team's work day by day.

In the construction of a building, a fence is put around the construction site. The project will not be dependent on other projects, the only interface with other projects and operations being the connection of services across the boundary. People working on the construction site will be managed by the project manager and will be wholly within his or her control. The majority of projects, however, take place as part of a programme of small- to medium-sized projects (SMPs) in which:

- they deliver mutually interdependent objectives where the full benefit is obtained only when several projects have been completed, (Examples 1.2 and 14.1)
- they are dependent on other projects or operations for elements essential to their completion, such as data, new technologies, or raw materials

– they borrow resources from a central resource pool, and those resources remain within the control of the resource managers; the manager must negotiate release of the resources to the project, and may loose them at little or no notice as the organization's overall priorities change.

I have used the terms small- to medium-sized, large and major projects. It is common to categorize them in this way. However, there is little agreement about what these mean in terms of project value, and there is a wide difference between industries. What constitutes a large information systems project would be considered small in the engineering construction industry. I saw an advertisement for a course which claimed to be about managing 'mega' projects and went on to classify that as projects over £1 million. It is now common to classify the size of projects by the way they use resources and share risks (Figure 14.1). Small- to medium-sized projects are not big enough to justify a dedicated project team, apart from a small core, and therefore borrow resources from a central pool. Large projects have a dedicated team, and can therefore be ring-fenced from the organization. Major projects are too large for one organization to bear the risk on its own, and are therefore usually undertaken by alliances. Perhaps for a private company, a large project will be equal to annual profits, a major project will be ten times greater than that (roughly equal to annual turnover), a medium project will be ten times smaller than a large one, and a small project ten times smaller again.

In the remainder of this chapter I shall focus on small- to medium-sized projects, and the management of a portfolio of such projects. I consider the problem of small projects, and the techniques for managing a portfolio of projects, called *programme management*. I consider the question of whether an organization should adopt a company-wide approach to the management of all its projects, and end by describing the role of a project office in helping to manage a programme. That will lead us on to the use of procedures and systems in the following chapter.

A borough council I worked with was building a new shopping centre, sports complex and car park linked together, with new road access and new services. This was broken into five projects, which now could not be totally ring fenced. The road had an interface with the car park, that with the shopping centre and sports complex, were linked to the services. Furthermore, the full benefit would not be obtained from the shopping centre and the sports complex until the link road and car park were completed.

Example 14.1 Related projects

14.2 The problem of small projects[a]

Small- to medium-sized projects, by definition, compete with other projects for resources from a common, finite resource pool. Within most organizations, there exists a large number of identifiable, smaller projects. Some organizations' operations are entirely based on SMPs. They arise through:

- small companies acting as subcontractors or suppliers to larger ones on several projects
- bespoke manufacturing companies (jobbing shops), making products for several customers
- mass production companies using project methods to introduce new products
- engineering, management and other consultants scheduling expensive staff across several projects
- research institutions undertaking projects for several clients
- organizations managing change, introducing new products or new technology, changing culture, or adopting Total Quality Management.

Often these projects, by themselves, would be less risky than large projects and could be managed effectively without the use of formal project management techniques. However, together in the multi-project environment, they can consume a considerable amount of management effort, because of:

- poor selection and prioritization of resources
- inadequate management and higher overheads
- higher ratio of risk
- a large number of interfaces between the projects.

SELECTION AND PRIORITIZATION

The primary reason for the failure of SMPs is they have inadequate priority for resources, alongside other projects and day-to-day operations. This is true for both organizations undertaking them as internal development projects and as contracts for external clients. Each project is small, and so the individual resource requirement does not appear to be much. However, when too many are taken on, there is insufficient resource to go round, with the result that no projects get completed (Example 2.5). Programmes of projects are the vehicles by which organizations implement their strategy, but many organizations fail to achieve their strategy because they fail to manage the selection process.

POOR MANAGEMENT AND HIGHER MANAGEMENT OVERHEADS

Small- to medium-sized projects are often more complex than they first appear and yet only cursory attention is given to their management. Reasons may be: the benefit is not as obvious as for large projects; smaller organizations do not accept formal project management; project management software is focused on critical path analysis and time management, and not on managing capacity. Also, because of their size, SMPs are often given to more junior managers, whereas the negotiating of priority requires more mature management skills. The cost of management of SMPs can be a very large proportion of the total cost, which increase the pressure for inadequate management.

HIGHER RISK RATIO

On SMPs, risks are more essential than expected. Small- to medium-sized companies managing SMPs can be hit remarkably badly by small risks. In addition, project times are shorter giving higher risk, and making it harder to compensate for overruns. There is less opportunity to recover.

INTERFACES

Small- to medium-sized projects in a portfolio of projects can have a large number of interfaces between them. Often a larger project will be broken into several smaller, subprojects which can be managed independently for most of the time. However, there may be several essential interfaces, where they share technology, information or one project contributes to the work of the other. These interfaces in themselves constitute risks, and so add to the increased riskiness of SMPs when compared to large projects. At times we can be faced with a choice between breaking a larger project into several smaller ones to reduce the risk, but at the same time increasing risk by creating new interfaces, (see Example 14.2).

In the unsuccessful attempt in 1992 to computerize the despatch of ambulances in the London Ambulance Service (LAS), the systems was designed as a single integrated system. In the final failure, the system was brought down almost by the failure of just one line of code, which caused the whole, integrated system to fail. In the successful attempt, three years later, the system was broken into 200 sub-systems, which were delivered and proved separately. This potentially created 40 000 interfaces, increasing the project management problem, but it made the system more robust. The system is now operating successfully.

Example 14.2 Balancing risks in multi-project management

14.3 Programme management

The management of a portfolio of small- to medium-sized projects is known as *programme management*. A programme can be defined as

- a group of projects
- managed together
- for added benefit.

Programme management is the management of a coherent group of projects to deliver additional benefit. The additional benefit can result from:

- the elimination of risk arising from interfaces between the projects
- the successful completion of individual projects through the coherent prioritization of resources
- a reduction in management effort.

Programme management includes the management of interfaces between projects, and the prioritization of resources to enable projects to happen and be completed.

A problem often encountered in programmes is that individual projects lurch from crisis to crisis as priorities are changed, and resources are switched from one project to another. A project starts, and makes some progress, but then loses its resources. Some time later the project starts again, but the total delay is greater than the period the project was without resources because the team take some time to build up momentum again, and they have to repeat some work. They are then switched temporarily to another project, only to return with an even greater delay. The project is on-off on-off, consuming large numbers of resources, but never gets finished (Example 2.5). Thus the tools of programme management are tools to coordinate the projects in a programme and to set priorities between them.

Coordination and impact matrix

The first element of programme management is the coordination of the links and interfaces between projects. The suggested way of managing these interfaces is a five-step process:

1. Identify the links which exist.
2. Group projects into programmes to minimize the links.
3. Determine the impact of the links between projects.
4. Divide the links into major and minor links.
5. Develop plans for managing the major links.

If you compare this five-step process to the risk management process in

Chapter 10 (Table 10.4), you will see that what it does is treat the impacts as risks and manages them accordingly. Ferns[1] proposed the use of an impact matrix to identify and classify the links. He proposed ways of providing a quantitative assessment of the links. As I did in the chapter on risk, I would propose just a qualitative assessment. The responsibility chart can be used as the impact matrix.

Prioritization and master project schedule

Before suggesting a process for prioritizing resources, let us consider some mistakes people make. A common approach is to develop a plan for each project, with its resource requirements, and then combine all the individual project plans into one gigantic programme plan. The computer is then asked to prioritize resources. Now computers are dumb things, and they need to be given a rule. Once given a rule, they will apply it blindly and unquestioningly. One possible rule is to make project A priority 1, project B priority 2, etc. What happens? Project A gets what it needs. Project B gets what it needs from what is left. And project C follows the stop-start stop-start process I described above. Another rule is to give priority by size of float. What happens? Every activity is scheduled 'hard right', that is when it has no float. You cannot abdicate management responsibility to the computer. You must retain management control. You do plan each project, but you must make decisions at a strategic level, and then plan each project within that framework. Thus I propose a six-step process for managing the prioritization of resources across projects in a programme:

1. Develop individual project plans, at the strategic (or milestone) level.
2. Determine the resource requirements and duration of the individual projects at that level.
3. Incorporate each individual project into the rough-cut capacity plan (or master project schedule) as a single element of work, assuming the resource profile and duration calculated at step 2.
4. Assign a priority to each project according to its resource requirements and its contribution to the overall programme objectives.
5. Schedule the individual projects in the MPS, according to their priority, and assign them a time and resource window.
6. Manage individual projects to deliver their objectives within the time and resource window.

This concept of the master project schedule is similar to the master production schedule in manufacturing management. Without it, it is not possible to achieve a balance of resources across several projects of differing priority while allowing them all to make smooth progress, and providing the managers with visibility and control. Resource prioritization

in programme management requires a balance of responsibilities between three groups of people: programme directors, project managers and resource managers (Figure 14.1).

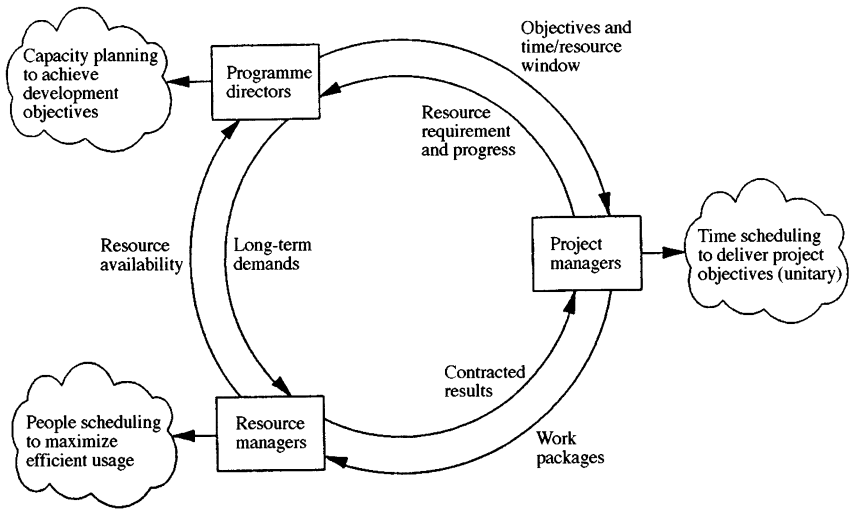

Figure 14.1 Programme management model

Requirements of programme directors

The objectives of the programme directors are to deliver the corporate development objectives within the overall resource constraints of the organization and to predict the future resource requirements. To achieve this, the programme directors use four systems (Figure 14.2).

1. They maintain the corporate plan, which sets two types of objective for the organization: routine objectives, which are fulfilled through campaigns of existing operations, and development objectives, which are achieved through projects. (In bespoke manufacturing companies, or jobbing shops, routine operations also consist of projects for clients.) The individual project objectives are passed to the project managers, who feed back resource requests.
2. The resource requests are entered into the rough-cut capacity plan, or master project schedule, to give a total resource demand for the organization. (This includes the demand from routine operations where they and the projects share common resources.)
3. The resource requirements are compared to the forecasts of availability received from the resource managers. Projects can be moved or stretched to smooth peaks and troughs, or additional resources obtained to fill the

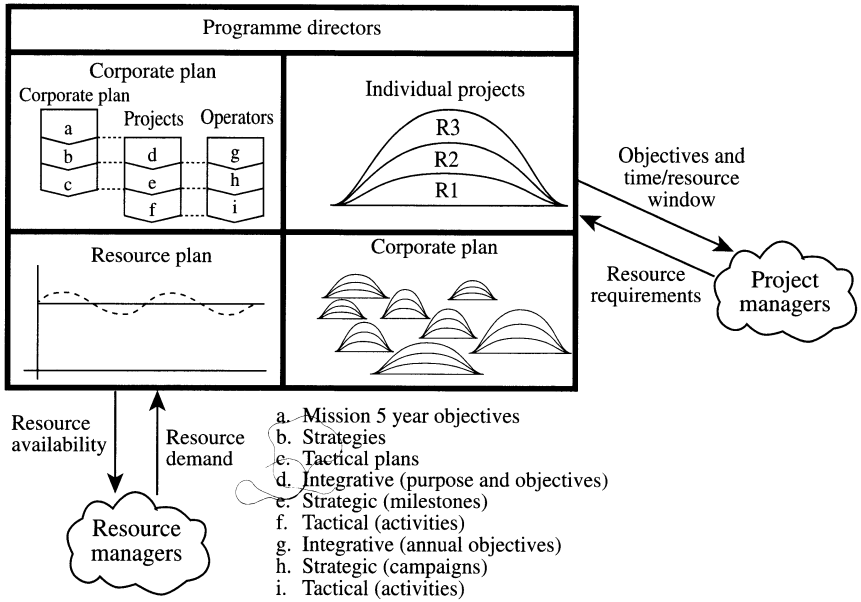

Figure 14.2 Systems for programme directors

peaks. Alternatively peaks can be met by the use of contract staff. The programme directors feed forecasts of future resource requirements to the resource managers.

4. When the resource plan balances, individual projects are assigned a time and resource window (as shown in the top right-hand box of Figure 14.3) which is fed to the project managers.

Requirements of project managers

Project managers must deliver the individual project objectives within the time and resource window assigned by the MPS. To achieve this, project managers use project management systems, including work breakdown structures, networks, bar charts and resource histograms (Figure 14.3).

The resource histogram is used to make the resource demands on the programme directors, and as a way of imposing the time and resource constraints on the individual projects. Multi-disciplinary packages of work are passed via the bar charts to the resource managers, and they complete the work within the agreed time scales to deliver the contracted results (milestones), in accordance with the project manager's plan. Although these resource demands should be within the constraints imposed by the MPS, and the resource managers should thus be able to satisfy them, the work-package plans should be negotiated and agreed with the resource managers

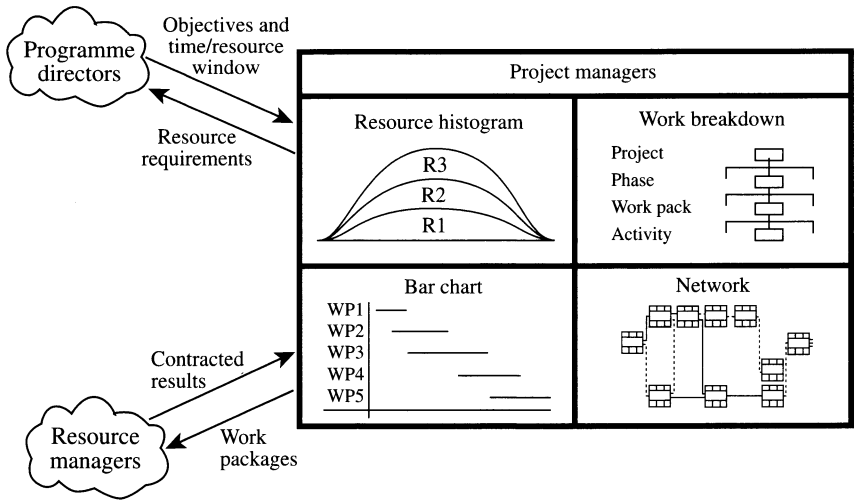

Figure 14.3 Systems for project managers

as far in advance as possible. The reason is that the MPS balances requirements and demands on a time scale of weeks or months, and so the resource managers need to fine tune the requirements on a day-to-day basis (see below).

Requirements of resource managers

The objectives of the resource managers are to deliver the contracted milestones while achieving the most efficient utilization of the available resources. This means achieving, as nearly as possible, continuous working with minimum overlap. To achieve this, the resource managers need four systems (Figure 14.4). They have to:

- compare the work-package plan passed from the project managers to the resource plan used by the programme directors – clearly, if the loop has been properly closed, these should be consistent (within the limits of accuracy)
- they assign work to people to do. It may be assigned to a single discipline via a resource scheduler, or to multi-disciplinary teams via a team scheduler.

Balancing the requirements

Two provisos were made above: the work-package plan and the resource plan must balance, and they must balance within the appropriate limits of accuracy.

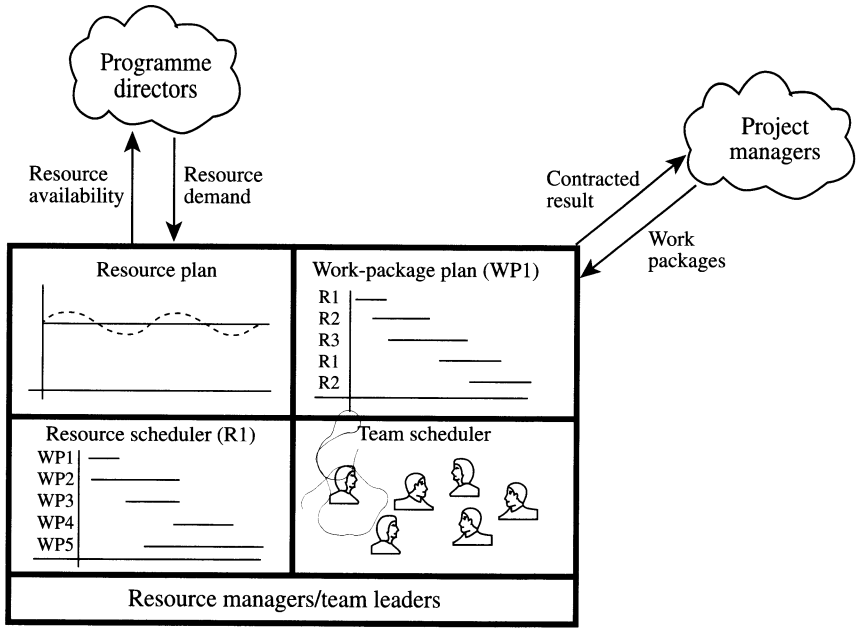

Figure 14.4 Systems for resource managers

1. It appears that resource managers are caught in a pincer between programme directors and project managers, and that they therefore need to ensure that these plans do balance. However, it is the project managers who are seen to fail when projects are not completed, and so it usually falls to them to manage the MPS. Alternatively, it is programme directors who are ultimately seen to fail when they do not deliver the organization's development objectives, and so they must ensure that the balance is achieved. The latter have the greatest influence in terms of ensuring that an adequate system is put in place, but they often delegate its management to project managers.
2. It may be possible to obtain high accuracy within the MPS with a time scale of months. However, the percentage error magnifies as the plan is first broken into individual project plans, and then work-package plans, and ultimately activity plans, with a time scale of weeks, or even days. Thus, even though the plans may nominally balance, there may be quite wild fluctuations day by day. The resource managers must manage these fluctuations to achieve the overall balance.

Programme management information systems needs

The information systems which meets the needs of programme management have three major elements (Figure 14.5) the capacity planner,

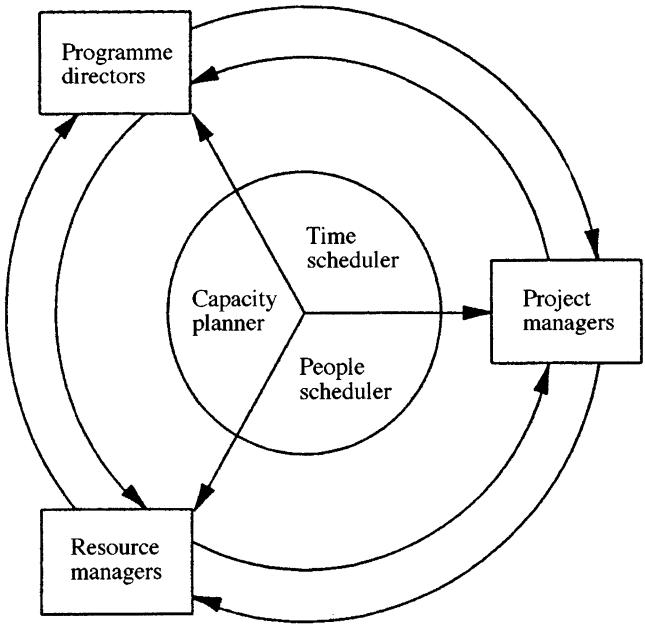

Figure 14.5 Information system for programme management

the time scheduler, and the people scheduler. We will return to systems in Chapter 16, where systems which meet this requirement are described.

14.4 Company-wide project management

It has been perceived wisdom that where an organization is undertaking several projects, it should adopt a common project management approach for all projects in the programme, regardless of the type of project, its size or the type of resource used.[2] The advantages of this are said to be:

- a consistent reporting mechanism can be adopted to give comparable progress reports across all projects in a programme
- resource requirements can be calculated on a consistent basis, facilitating the management of capacity constraints
- people can move between projects without having to relearn the management approach used project by project
- small projects can be used as a training ground for future managers of large projects

An inherent, though often unrecognized, assumption behind this view is that the projects within the programme are fundamentally homogeneous.

However, Payne[3] identified that where projects are inhomogeneous, people reported better results for their projects, and fewer failures, if they tailored their project management procedures to the type of project. He differentiated projects by their size, urgency and skill mix.[4] Elvaristo has focused more on distance. He identified eleven dimensions of distance, although the most common is geographical distance.[5] Table 14.1 shows a classification of projects and programmes with seven types of project/programme over single or multiple sites. He even identified that the route an organization followed through Table 14.1 can influence their choice of procedures. Two organizations operating many projects over many sites might use different procedures depending on whether they first gained experience with a single project over many sites, or a programme on a single site.

Table 14.1 Classification of project with many projects over many sites

Sites	*Single project*	*Many projects*	*Many programmes*
Single	Single project Single site	Single programme Single site	
Many	Single project	One project per site One site per project	One programme per site One site per programme
Many	Many sites	One project per site Each project many sites	Many programmes over many sites

The explanation

Payne's results are fairly easy to explain.

PROJECTS BY SIZE

We should understand why it is necessary to tailor the procedures by size:

1. In the management of SMPs, the main emphasis is on the prioritization of resources across several projects. Small projects also cannot stand the bureaucracy of procedures designed for larger, more complex projects.
2. In the management of large projects, the emphasis is on the coordination of a complex sequence of activities, balancing resources across the activities, but within the control of the project manager, to enable the critical activities to take place in time, and to stop the bulk work becoming resource constrained. Large projects have much greater data management requirements than SMPs. Interestingly, large projects seemed to suffer more than SMPs when common procedures were used, perhaps indicating that all their data management requirements were not met.

3. In the management of major projects, the emphasis is on coordinating the activities of people across several subprojects, and on managing the considerable risk.

PROJECTS BY RESOURCE TYPE

The goals and methods matrix introduced in Section 1.6 explains why projects with different resource types require different procedures:

1. Engineering projects are labelled type 1 projects, and with well-defined goals and methods of achieving those goals lend themselves to activity-based approaches to planning. It is these types of projects that many of the traditional books on project management have been written about, that many of the traditional software products, such as Artemis, have been developed for, and which have a long history of proceduralization in the engineering construction and building industries.
2. Product development projects are labelled type 2 projects. The goals are well understood, but identifying the method of achieving the goals is the main point of the project. These are common in weapons systems development and projects from the electronic manufacturing industries. The early project management procedures developed in the 1950s by the US military were aimed at these types, and more recently goal-directed approaches. Plans for this type of project are best based on a bill of materials (product breakdown structure) based on the known goals; that is a milestone-based approach to planning, where the milestones represent components of the product.
3. Information systems projects are labelled type 3 projects. With the goals poorly defined, the planning approaches tend to be based around the project life cycle; that is a milestone-based approach to planning is adopted, but the milestones now represent completion of life-cycle stages. Methodologies such as PROMPT, PRINCE and PRINCE 2 are aimed at this type of project, as are computer systems such as PMW (see Chapter 15).
4. Type 4 projects tend to be managed as type 2 or type 3 projects depending on their nature. Research projects tend to be managed through the life cycle, whereas organizational change projects tend to be managed through a bill of materials or product-based milestone plan.

If you try to adopt an activity-based approach to managing type 2, 3 or 4 projects, it will increase the likelihood of failure. Thus we see that for projects of different sizes and resource types, we must tailor our project procedures to meet the needs of the individual project types.

The solution

I listed above some presumed benefits for adopting a common approach to the management of all the projects in a programme. Presumably those

benefits still remain. Hence, how can we resolve the dilemma of achieving those benefits while still developing a system that meets the needs of the individual project types. The answer is to develop a strategic plan for every project based on the common approach, but allow different projects to adopt different approaches at the detail or tactical level. This means that at the three fundamental levels of planning, the following plans are developed:

INTEGRATIVE LEVEL

A Project Definition Report is developed for all projects, based on a common model. This ensures that all projects are defined in a consistent way, giving a common basis for comparison and prioritization.

STRATEGIC LEVEL

A milestone plan and project responsibility chart are developed for all projects. For types 1 and 2 projects, the milestones represent components of the product, for types 3 and 4 projects, completion of life-cycle stages. This gives a consistent approach for assigning resources and responsibilities, and for tracking and comparing progress. The resource plan is developed at the milestone level.

TACTICAL LEVEL

At this level and below, project planning methods will be chosen based on the nature of the project:

- for small projects, there may be no further levels of planning
- for large projects there may be one or more levels of planning
- for engineering construction and building projects, the lower levels will be developed in some detail at an early stage, based on the known activities to be performed
- for type 2 and 3 projects, the lower level activity plans will be developed on a rolling-wave basis, as early components are delivered, or early life-cycle stages are completed respectively.

Example 14.2 contains an example of the application of this approach to achieve a successful outcome for a project. In the next chapter I describe the use of systems and procedures, and you will see that by adopting the breakdown approach suggested, it is a simple matter to implement this recommendation

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In Chapter 5 I described a project to build a warehouse in the Regional Health Authority in the UK. The authority was switching from a situation where each hospital bought and stored its supplies to one where the region bought and stored

materials centrally. The benefit was a reduction in overall stock holdings, because whereas formerly each hospital was stocked up to peak demand, under the new regime the individual peaks and troughs could be smoothed. The project was divided into 22 subprojects:

- construction of the warehouse (half the £8 million spend) [a type 1 building project]
- creation of the establishment to run the warehouse [a type 2 logistics project]
- writing of the computer systems to operate the warehouse [a type 3 IS project]
- redeployment and training of people (there was a no redundancy policy) [a type 4 personnel project]
- changing the buying function from hospital to region [type 4, organizational change]
- changing the budget from hospital-based to regional-based [type 3, systems]
- implementing in 15 hospitals [type 4 organizational change]
- commissioning the warehouse [type 2, logistics]

There were two project managers, one from the Estates Department, managing the construction of the warehouse, and one from Operations managing the rest of the work. There was also a series of functional team leaders managing each of the subprojects.

Quite by chance, or perhaps because it was the only approach that stood any chance of getting the different project teams to talk, we adopted the planning approach described above. I was invited to run a series of project start-up workshops, to develop plans across all the subprojects. I was engaged by the operational project manager, because having no previous experience of managing projects, he did not know where to begin.

We invited both project managers and all the team leaders to the workshop. The building project manager and IS project team leader refused to come on the grounds that they already had their plans in Artemis and Project Manager Workbench, respectively. We tried to persuade them to come to the start-up workshop, using the argument that although they already had their plans, it might be a good idea to ensure that the other plans were linked into theirs, and vice versa. The IS team leader was persuaded; the building project manager said his plan was published, and the others could determine the links.

At the workshop we developed a milestone plan for all the subprojects, except the building project, and established the links between all the plans. It turned out that the 20 element milestone plan for the IS subproject, although derived from first principles, was a very good summary of the 200 activity plan in PMW. Hence it was very effective at linking that more detailed plan into all the other plans.

A month later we had the first review meeting. We tracked progress against all the milestone plans, and monitored the links between all the subprojects. The buildings project manager rolled his Artemis network along the table top, and everybody stared blankly and asked him what it meant. By the second review meeting he, too, had produced a summary milestone plan of his more detailed network, and from then on, at the monthly review meeting progress of all the subprojects was tracked against the milestone plans.

The building subproject continued to be managed day-by-day against the Artemis plan, the IS subproject against the PMW plan, and all the other subprojects were managed using a paper-based approach. However, progress on all the subprojects was summarized on to the milestone plans, and they were used to compare and track progress at the monthly review meetings. The warehouse was commissioned on time, 15 months after the start-up workshop, with all the subprojects having been completed in phase.

Example 14.2 Tailoring procedures to the type of project

14.5 The Project Support Office

Many project-based organizations use a Project Support Office (PSO) to administer project management routines. It removes some uncertainty from projects if experienced people operate the control procedures. Large to major projects often have a dedicated office comprising people who move from project to project. Smaller projects cannot afford the overhead of a dedicated office, so they share one with projects from related programmes. Often managers of small- to medium-sized projects undertake all the administrative tasks themselves, or share them among people working on the project. What happens is that they do not get done, as the technical work of the project begins to consume all the team's efforts. Hence the services of a PSO can be just as valuable to a small project as to a large one. Indeed, since it will be servicing all the projects of the organization, it can ensure all projects receive adequate priority, only projects for which there are adequate resources are started in the first place, and consistent approaches are used across all projects within the organization. In this section I describe the role of the Project Support Office, and identify the personnel it contains.

Duties of the Project Support Office

The duties of the PSO include:

MAINTAINING THE MASTER PROJECT AND PROGRAMME PLANS

The PSO maintains the master project and programme plans on a central (computer) system:

- for a large project, that will be a stand-alone plan
- for a major project, it may be broken down into subproject plans
- for a programme, the PSO will maintain both a programme plan and individual project plans.

In all cases there must be clearly defined levels of access for different managers. All managers will need to interrogate the plans at all levels.

However, they will only be able to make changes at their level of responsibility. Changes must obviously be within the constraints set at the higher level. If that is impossible, then the approval of the higher level manager must be sought. Sometimes, the ability to make changes is limited to the PSO staff. Managers can only recommend. In this way the integrity of the system is maintained.

MAINTAINING THE COMPANY-WIDE RESOURCE PLAN

The resource aggregation at the project level provides the company-wide resource plan. The PSO can take a company-wide view of the resource availability, and assign resources to individual projects, (within the constraints set by the programme directors). Individual projects are not in a position to do this, unless they have a dedicated resource pool.

PROVIDING RESOURCE DATA TO THE PROJECT INITIATION PROCESS

When the organization is considering whether to initiate a new project, the PSO can compare the resource requirements to projected availability. This information can then be used as part of the feasibility study. The PSO does not have the power to veto a project, it is up to senior management to accept or reject it. However, if there are insufficient resources, senior management must decide whether to stop another project, or buy in resources from outside. That is extremely valuable information. Better not to start a project, than stop it half finished, especially a client contract.

ISSUING WORK-TO LISTS AND KIT-MARSHALLING LISTS

At regular intervals, as agreed with the project managers, or as set by the company's procedures, the PSO will issue work-to lists and kit-marshalling lists (Section 12.4). Giving this work to the PSO ensures that it is done regularly, and that it is done to a consistent style, in a way which people from across the organization can readily understand.

FACILITATING THE CONTROL PROCESS

The PSO can manage the control process, and relieve project staff of some of the bureaucratic processes, allowing the latter to concentrate on the project work. Figure 6.8 is a responsibility chart showing a procedure for this control cycle. The PSO will of course facilitate the control of time, cost, quality, scope, resource usage (organization) and risk. This activity requires the project office to:

- progress, receive and process the turn-around documents
- analyse the consequences of the progress information

– perform the what-if analysis
– revise the plan with the appropriate manager
– reissue work-to lists for the next period.

ISSUING PROGRESS REPORTS

Following on from the control process, the PSO can issue progress reports. These may go to:

– project managers
– programme directors
– other senior managers
– the client.

The reports issued will be defined by a procedures manual. The data gathered in turn-around documents may be used for other purposes, such as:

– pay-roll
– recording of holidays and flexitime
– raising of invoices
– recording project costs for the company's accounting systems.

For the last, it is vital that costs are recorded by the project and sent to the accounts system, and not vice versa. With the latter, information can be received several months after costs are incurred, which is far too late for control. The data can be recorded separately for each system, but then it almost never agrees. The despatch of this data, which may be electronic, will be done by the PSO as part of the reporting process. It is important to review the data before despatch, rather than allowing it to go automatically, to ensure its integrity. However, this can be simplified by building in automatic checks.

OPERATING DOCUMENT CONTROL AND CONFIGURATION MANAGEMENT

Projects can involve the transmittal of a large amount of information. The PSO can coordinate that transmittal. This may include:

1. Keep a library of progress reports for ready access by any (authorized) personnel.
2. Record all correspondence to and from clients and subcontractors. As part of this process, the PSO may include acknowledgement slips, and monitor their return to ensure receipt of the correspondence. Technical personnel can be lax in the recording of correspondence, which can cause problems later if there is a claim. To avoid this, some organizations insist that all outward correspondence goes via the PSO, and a copy of

all inward correspondence is logged there. Since all correspondence becomes part of the contract, the need to log it cannot be stressed enough.

3. Monitor all correspondence between project personnel. On a large project, this can drastically reduce the channels of communication. However, it is more efficient to have a central clearing point for communication on projects with as few as four people. This can be essential if the people have not worked together before, on projects involving tight time scales, and on projects involving research scientists, who do not tend to be very communicative.
4. Maintain the records for quality control and configuration management, to ensure that they are properly completed, before work commences on the next stage. This can also include change control.
5. Monitor the despatch of design information to site or subcontractors, to ensure it is received and the latest information used. I have known of cases where drawings are lost in the post, and, of course, the intended recipients have no way of knowing they should be using new data. Acknowledgement slips solve this problem.
6. Issue management. Issues can arise on a project, which may or may not lead to a change or a claim. The PSO can manage the decision-making process.

PRODUCING EXCEPTION LISTS

As part of the control process, the PSO may produce exception reports. They will produce variance reports at each reporting period, but exception lists will highlight items which have become critical.

PURCHASING AND ADMINISTRATION OF SUBCONTRACTS

Where there is not already a purchasing department within the parent organization, the PSO can take over the procurement function. There is a view that in some project-based organizations a very high proportion of total expenditure on projects is through purchased materials or subcontract labour, and so this function should be within the control of project or programme management.

MAINTAINING THE CLIENT INTERFACE

The PSO may manage the relationship with the client. This includes the issuing of progress reports, the control of communications, and the despatch of invoices. It also involves producing reports against agreed project milestones, and the maintenance of links with opposite numbers in the client organization so that any threats to the contract can be worked through together. The project manager must also maintain close links with

their opposite number and the client's sponsor, to help maintain a good working relationship. Contacts with the sponsor and other decision makers can help to ensure continued support for the current contract, which will ease its delivery, and help to win new work.

ACTING AS A CONSCIENCE

Effective project management requires that all the control procedures described are well maintained. Some can become bureaucratic, and distracting for the technical staff. While the project is running smoothly, they can seem unnecessary, and not receive adequate attention. However, if the project does go wrong, then the data and plans are required to plan recovery or defend a claim. It is then too late to start recording the data and maintaining the plans. It must be done from the start. The PSO can relieve project staff of the bureaucratic burden. Because they maintain the plans as their day-to-day duties, they become efficient at it, so the cost of the administrative overhead is less than if project personnel do it. Indeed, the service and support they give can speed up the work of the project. In fulfilling this role, the PSO act as a conscience, because they ensure that the regular reports are filed, and they will not let certain major milestones be met until appropriate documentation is completed.

Personnel of the Project Support Office

The number and skills of people in the PSO depend on their work. Possible personnel include:

PLANNERS

At its simplest, there may be just one or more planners, (called project controllers or planning engineers). They can fulfil all the planning and control functions described above, but not procurement or client liaison.

ADMINISTRATORS

If the document control is particularly complex, then it may be appropriate to include an administrator, clerk or secretary.

COST CONTROLLERS

For larger operations, the cost control function may be split from the remainder. The cost controller is called a cost engineer or project accountant. A cost controller should also maintain links with the estimating function. If the turn-around documents are also used to gather pay-roll data, they may also maintain links with the personnel function.

MATERIALS PLANNERS

Again, for larger operations, or ones with a large material content, it is common to split out the material management function. The materials planners maintain the material and design schedules, and issue the kit-marshalling lists. They also liaise with procurement and stores, and may issue work-to lists to design.

PROCUREMENT CLERKS

When the PSO is fulfilling the procurement function, purchasing, progress and expediting clerks may be included in the staff. There may also be inspectors, and quantity surveyors. The latter will judge performance of subcontractors.

CONTRACT ADMINISTRATORS

When the PSO also manages the client interface, then the staff will include contract administrators or managers.

14.6 Summary

1. A programme is a portfolio of projects managed together to deliver additional benefits. Programme management is the process of coordinating the management of the projects and assigning priorities to them to achieve the benefits.
2. There are five steps to coordinating the projects:
   - identify links
   - group projects into programmes to minimize links
   - determine the impact of links
   - prioritize into major and minor links
   - manage the major links.
3. There are six steps for assigning priorities to projects for resources:
   - plan individual projects
   - calculate individual project's resource requirements
   - place each project into the master project schedule
   - assign each project priority
   - assign it a time and resource window in the MPS
   - manage each project within its window.
4. Tailoring procedures by type of project leads to a more successful outcome. However, there are advantages in achieving some consistency of approach including:
   - a consistent reporting mechanism gives comparable progress reports across all projects

- resource requirements can be calculated on a consistent basis, facilitating the management of capacity constraints
- people can move between projects without having to relearn new management approaches
- small projects can be used as a training ground for future managers of large projects.

5. This can be achieved by having:
   - at the integrative level a Project Definition Report for all projects
   - at the strategic level a milestone plan and responsibility chart for all projects
   - at the tactical level tailored project plans dependent on the type of project.
6. The role of the project support office is to:
   - maintain the master project and programme plans
   - maintain the company-wide resource plan
   - provide resource data to the project initiation process
   - issue work-to lists and kit-marshalling lists
   - facilitate the control process
   - issue progress reports
   - operate document control and configuration management
   - produce exception lists
   - purchase and administration of subcontracts
   - maintain the client interface
   - act as a conscience.
7. The personnel contained in the project support office may be:
   - planners
   - administrators
   - cost controllers
   - materials planners
   - purchasing, progress and expediting
   - contract administration.

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Note

a. Section 14.2 incorporates material from the first edition based on a contribution originally made by Deborah Carlton.