Chapter 2

# Step Wise: an overview of project planning

OBJECTIVES

When you have completed this chapter you will be able to:

- approach project planning in an organized step-by-step manner;
- see where the techniques described in other chapters fit into an overall planning approach;
- repeat the planning process in more detail for sets of activities within a project as the time comes to execute them.

## 2.1 Introduction to Step Wise project planning

This chapter describes a framework of basic steps in project planning and control upon which the following chapters build. There are many different techniques that can be used in project planning and this chapter gives an overview of the points at which these techniques can be used during project planning. Chapter 4 will illustrate how different projects need different approaches, but this framework should always apply to the planning process used.

The framework described is called the Step Wise method to help to distinguish it from other methods such as PRINCE 2. PRINCE 2 is the set of project management standards that have been published by the Central Computing and Telecommunications Agency (CCTA) for use on British government IT projects. The standards are also widely used on non-government projects in the United Kingdom. Step Wise should be compatible with PRINCE 2. It should be noted, however, that Step Wise covers only the planning stages of a project and not monitoring and control.

Appendix A adds some further details about the PRINCE 2 approach. There is also some use of PRINCE 2 in the Netherlands and Australia.

In order to illustrate the Step Wise approach and to show how it might have to be adapted to deal with different circumstances, two parallel examples are used.

Let us assume that there are two former Computing and Information Systems students who have now had several years of software development experience.

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**Case study examples: Brightmouth College Payroll and International Office Equipment Group Maintenance Accounts**

Brigette has been working for the Management Services department of a local government authority when she sees an advertisement for the position of Information Systems Development Officer at Brightmouth College. She is attracted to the idea of being her own boss, working in a relatively small organization and helping it to set up appropriate information systems from scratch. She applies for the job and gets it. One of the first tasks that confronts her is the implementation of independent payroll processing! (This scenario has already been used as the basis of some examples in Chapter 1.)

Amanda works for International Office Equipment (IOE), which manufactures and supplies various items of high-technology office equipment. An expanding area of their work is the maintenance of IT equipment. They have now started to undertake maintenance of equipment for which they were not originally the suppliers. A computer-based batch processing system deals with invoicing on a job-by-job basis. An organization might have to call IOE out several times to deal with different bits of equipment and there is a need to be able to group the invoice details for work done into 'group accounts' for which monthly statements will be produced. Amanda has been given her first project management role, the task of implementing this extension to the invoicing system.

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In Table 2.1 we outline the general approach that might be taken to planning these projects. Figure 2.1 provides an outline of the main planning activities. Steps 1 and 2, 'Identify project scope and objectives' and 'Identify project infrastructure', may be tackled in parallel in some cases. Steps 5 and 6 will have to be repeated for each activity needed to complete the project.

A major principle of project planning is to plan in outline first and then in more detail as the time to carry out an activity approaches. Hence the lists of products and activities that are the result of Step 4 will be reviewed when the tasks connected with a particular phase of a project are considered in more detail. This will be followed by a more detailed iteration of Steps 5 to 8 for the phase under consideration.

## 2.2 Step 0: Select project

Chapter 3 discusses project evaluation in more detail.

This is called Step 0 because in a way it is outside the main project planning process. Projects are not initiated out of thin air – some activity has to take place before deciding that this project rather than another is worth undertaking. This project evaluation may be done on an individual basis or as part of strategic planning.

**Table 2.1** *An outline of Step Wise planning activities*

| *Step* | *Activities within step* |
|---|---|
| 0 | Select project |
| 1 | Identify project scope and objectives |
| | 1.1 Identify objectives and measures of effectiveness in meeting them |
| | 1.2 Establish a project authority |
| | 1.3 Identify all stakeholders in the project and their interests |
| | 1.4 Modify objectives in the light of stakeholder analysis |
| | 1.5 Establish methods of communications with all parties |
| 2 | Identify project infrastructure |
| | 2.1 Establish relationship between project and strategic planning |
| | 2.2 Identify installation standards and procedures |
| | 2.3 Identify project team organization |
| 3 | Analyse project characteristics |
| | 3.1 Distinguish the project as either objective- or product-driven |
| | 3.2 Analyse other project characteristics |
| | 3.3 Identify high level project risks |
| | 3.4 Take into account user requirements concerning implementation |
| | 3.5 Select general lifecycle approach |
| | 3.6 Review overall resource estimates |
| 4 | Identify project products and activities |
| | 4.1 Identify and describe project products (or deliverables) |
| | 4.2 Document generic product flows |
| | 4.3 Recognize product instances |
| | 4.4 Produce ideal activity network |
| | 4.5 Modify ideal to take into account need for stages and checkpoints |
| 5 | Estimate effort for each activity |
| | 5.1 Carry out bottom-up estimates |
| | 5.2 Revise plan to create controllable activities |
| 6 | Identify activity risks |
| | 6.1 Identify and quantify activity-based risks |
| | 6.2 Plan risk reduction and contingency measures where appropriate |
| | 6.3 Adjust plans and estimates to take account of risks |
| 7 | Allocate resources |
| | 7.1 Identify and allocate resources |
| | 7.2 Revise plans and estimates to account for resource constraints |
| 8 | Review/publicize plan |
| | 8.1 Review quality aspects of project plan |
| | 8.2 Document plans and obtain agreement |
| 9 | Execute plan |
| 10 | Lower levels of planning |

Figure 2.1 will be revisited in subsequent chapters where we will highlight and describe the individual steps in the Step Wise framework.

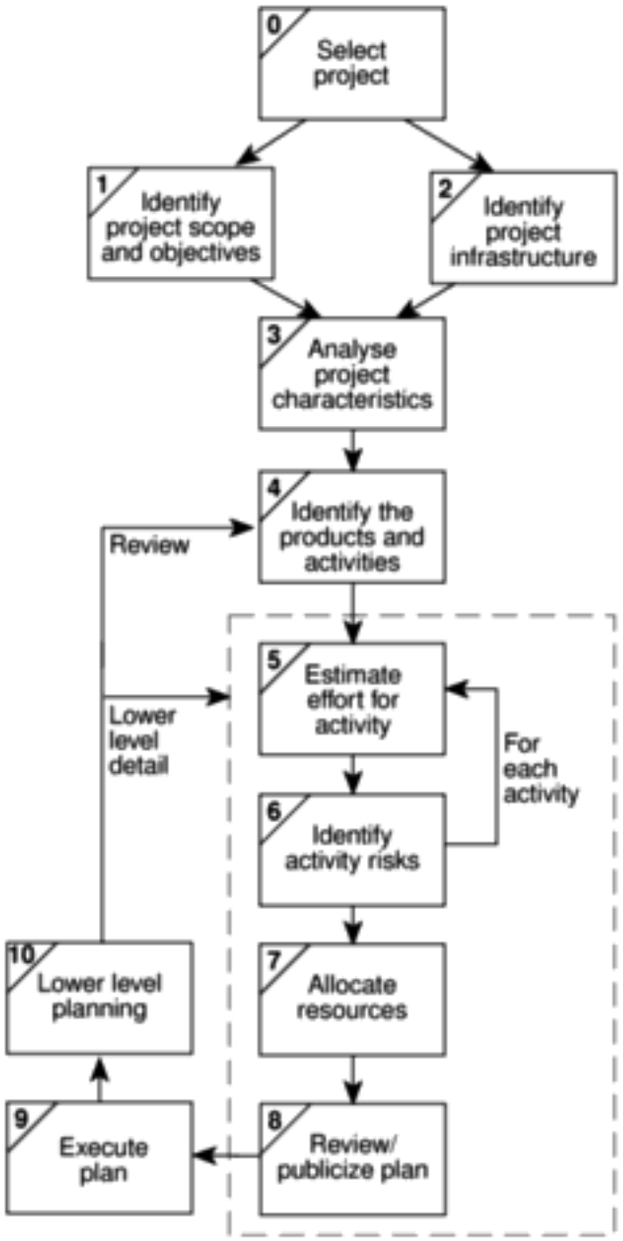


**Figure 2.1** *An overview of Step Wise.*

## 2.3 Step 1: Identify project scope and objectives

The activities in this step ensure that all the parties to the project agree on the objectives and are committed to the success of the project. A danger to be avoided is overlooking people who are affected by the project.

### *Step 1.1: Identify objectives and practical measures of the effectiveness in meeting those objectives*

We discussed earlier the need for agreed objectives for a project and ways of measuring the success in achieving those objectives.

**Case Study Example: Project objectives**

The project objectives for the Brightmouth College payroll project have already been discussed in Exercise 1.7.

Amanda at IOE has the objectives clearly laid down for her in the recommendations of a feasibility study report, which have been accepted by IOE management. The main objectives are to allow a detailed monthly statement to be sent to group account clients and to be able to reallocate the cash received to individual jobs when the client has paid on the monthly statement. There are also other objectives that refer to expected timescales and the resources that may be used.

### *Step 1.2: Establish a project authority*

A single overall project authority needs to be established so that there is unity of purpose among all those concerned.

**Case Study Examples: Project authorities**

Amanda finds that her manager and the main user management have already set up a Project Board that will have overall direction of the project. She is a little concerned because the equipment maintenance staff are organized with different sections dealing with different types of equipment. This means that a customer might have work done by several different sections. Not all the sections are represented on the Project Board and Amanda is aware that there are some differences of opinion among the different sections. It is left to the user representatives on the board to resolve those differences and to present an agreed policy to the systems developers.

Throughout the text we use capitalized initial letters to indicate a term that has a precise meaning in the PRINCE 2 standards, e.g. Project Board.

Brigette finds that effectively she has two different clients for the payroll system: the finance and personnel departments. To help resolve conflicts, it is agreed that the managers of both departments should attend a monthly meeting with the Vice-Principal, which Brigette has arranged in order to steer the project.

### *Step 1.3: Identify all stakeholders in the project and their interests*

Recall that this was the basis of a discussion in Chapter 1. Essentially all the parties who have an interest in the project need to be identified. In Exercise 1.8 you produced a list of the stakeholders in the Brightmouth College Payroll project.

**Exercise 2.1**

What important stakeholders outside the IOE organization should be considered in the case of the IOE Maintenance Group Accounts System?

*Step 1.4: Modify objectives in the light of stakeholder analysis*

In order to gain the full cooperation of all concerned, it might be necessary to modify the project objectives. This can mean adding new features to the system giving a benefit to some stakeholder group as a means of assuring their commitment to the project. This is potentially dangerous, since the system size might be increased and the original objectives obscured. Because of these dangers, this process must be done consciously and in a controlled manner.

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**Case Study Examples: Modified project objectives**

The IOE maintenance staff are to be given the extra task of entering data about completed jobs. They do not benefit from this additional work. To give some benefit, the system is to be extended to reorder spare parts automatically when required.

At Brightmouth College, the personnel department has a lot of work preparing payroll details for finance. It will be tactful to agree to produce some management information reports for personnel from the payroll details held on the computer.

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*Step 1.5: Establish methods of communication with all parties*

For internal staff, this should be fairly straightforward, but a project leader implementing a payroll system would need to find a contact point with BACS (Bankers Automated Clearing Scheme) for instance.

## 2.4 Step 2: Identify project infrastructure

Projects are rarely initiated in a vacuum. There is usually some kind of existing infrastructure into which the project can fit. The project leader who does not already know about this structure needs to find out its precise nature.

*Step 2.1: Identify relationship between the project and strategic planning*

Some of the issues of strategic planning are addressed in Chapter 3.

As well as identifying projects to be carried out, an organization needs to decide the order in which these projects are to be carried out. It also needs to establish the framework within which the proposed new systems are to fit. Hardware and software standards, for example, are needed so that various systems can communicate with each other. These strategic decisions must be documented in a strategic business plan or in an information technology plan that is developed from the business plan.

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**Case Study Examples: Role of existing strategic plans**

Amanda finds at IOE that there is a well-defined rolling strategic plan that has identified her group accounts subsystem as an important required development. Because it is an extension of an existing system, the hardware and software platforms upon which the application are to run are dictated.

Brigette at Brightmouth College finds that there is an overall College strategic plan that describes new courses to be developed, and so on, and mentions in passing the need for 'appropriate administrative procedures' to be in place. In a short section in a consultant's report from an accountancy firm concerning the implications of financial autonomy, there is a recommendation that independent payroll processing be undertaken. Although the college has quite a lot of IT equipment for teaching purposes, there is no machine set aside for payroll processing and the intention is that the hardware to run the payroll will be acquired at the same time as the software.

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### *Step 2.2: Identify installation standards and procedures*

Any organization that develops software should define its development procedures. As a minimum, the normal stages in the software life cycle to be carried out should be documented along with the products created at each stage.

*Change control* and *configuration management* standards should be in place to ensure that changes to requirements are implemented in a safe and orderly way.

See Chapter 9 on Monitoring and Control.

The procedural standards may lay down the quality checks that need to be done at each point of the project life cycle or these may be documented in a separate *quality standards and procedures* manual.

The organization, as part of its monitoring and control policy must have in place a *measurement programme* that dictates that certain statistics have to be collected at various stages of a project.

Finally the project manager should be aware of any *project planning and control standards*. These will relate to the way that the project is controlled: for example, the way that the hours spent by team members on individual tasks are recorded on time-sheets

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**Case Study Examples: Identifying standards**

Amanda at IOE finds that there is a very weighty manual of development standards, which, among other things, specifies that SSADM will be the analysis and design method used. She finds that a separate document has been prepared, laying down quality procedures. This specifies when the reviews of work will be carried out and describes detailed procedures about how the reviews are to be done. Amanda also finds a set of project management guidelines modelled closely on PRINCE 2.

Brigette finds no documents of the nature that Amanda found at IOE except for some handouts for students that have been produced by different lecturers at different times and that seem to contradict each other.

As a stop-gap measure, Brigette writes a brief document, which states what the main stages of a 'project' (perhaps 'job for the user' would be a better term in this context) should be. This happens to be very similar to the list given in Chapter 1. She stresses that:

- no job of work to change a system or implement a new one is to be done without there being a detailed specification first;
- the users must agree to, or 'sign off', each specification in writing before the work is carried out.

She draws up a simple procedure for recording all changes to user requirements.

Brigette, of course, has no organizational quality procedures, but she dictates that each person in the group (including herself) has to get someone else to check through his or her work at the end of a major task and that, before any new or amended software is handed over to the users, someone other than the original producer should test it. She sets up a simple system to record errors found in system testing and their resolution. She also creates a log file of reported user problems with operational systems.

Brigette does not worry about time sheets but arranges an informal meeting with her colleagues each Monday morning to discuss how things are going and also arranges to see the Vice-Principal, who is her official boss, and the heads of the finance and personnel sections each month to review progress in general terms.

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### *Step 2.3: Identify project team organization*

Some of these issues will be discussed in Chapter 11 – Managing people and organizing teams.

Project leaders, especially in the case of large projects, will often have some control over the organizational structure of the project team. More often, though, the organizational structure will be dictated to them. For example, there might have been a high level managerial decision that code developers and systems analysts will be in different groups, or that the development of PC applications will not be done within the same group as that responsible for 'legacy' main-frame applications.

If the project leader does have some control over the project team organization then this would best be considered at a later stage (see Step 7: Allocate resources).

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**Case Study Examples: Project organization**

At IOE, there are groups of systems analysts set up as teams that deal with individual user departments. Hence the users always know whom they should contact within the information systems department if they have a problem. Code developers, however, work in a 'pool' and are allocated to specific projects on an *ad hoc* basis.

At Brightmouth College, Brigette has seconded to her a software developer who has been acting as a technician supporting the computing courses in the college. She is also allowed to recruit a trainee analyst/programmer. She is not unduly worried about the organizational structure that is needed.

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## 2.5 Step 3: Analyse project characteristics

The general purpose of this part of the planning operation is to ensure that the appropriate methods are used for the project.

Chapter 4 elaborates on the process of analysing project characteristics.

### *Step 3.1: Distinguish the project as either objective- or product-driven*

This has already been discussed in the first chapter. A general point to note is that as system development advances, it tends to become more product-driven, although the underlying objectives always remain and must be respected.

### *Step 3.2: Analyse other project characteristics (including quality-based ones)*

For example, is this an information system that is being developed or a process control system, or does it have elements of both? Is it a safety-critical system, that is, where human life could be threatened by a malfunction?

### *Step 3.3: Identify high level project risks*

Consideration must be given to the risks that threaten the successful outcome of the project. Generally speaking most risks can be attributed to the operational or development environment, the technical nature of the project or the type of product being created.

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**Case Study Example: High level risks**

At IOE, Amanda identifies the danger of there being resistance to the new system by maintenance engineers, especially as a new centralized group accounts office is to be set up. Amanda decides therefore that additional efforts are needed to consult all sections involved and that the new procedures should be introduced in small increments to accustom staff to them gradually.

Brigette at Brightmouth College considers the application area to be very well-defined. There is a risk, however, that there might be no application on the market that caters for the way that things are done at the moment. Brigette, therefore, decides that an early task in the project is to obtain information about the features of the main payroll applications that are available.

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### *Step 3.4: Take into account user requirements concerning implementation*

The clients will usually have their own procedural requirements. For example, work for government departments usually requires the use of SSADM.

### *Step 3.5: Select general lifecycle approach in the light of the above*

The project life cycle to be used for the project will be influenced by the issues raised above. For example, a prototyping approach might be used where the user requirements are not clear.

Chapter 4 discusses life cycles in more detail.

*Step 3.6: Review overall resource estimates*

Chapter 5 goes into more detail on this topic. Function points are an attempt to measure system size without using the number of lines of code.

Once the major risks have been identified and the broad project approach has been decided upon, this would be a good point at which to re-estimate the effort and other resources required to implement the project. Where enough information is available, an estimate based on function points might be appropriate.

## 2.6 Step 4: Identify project products and activities

The more detailed planning of the individual activities that will be needed now takes place. The longer term planning is broad and in outline, while the more immediate tasks are planned in some detail.

*Step 4.1: Identify and describe project products (or deliverables)*

Chapter 7 goes into this in more detail.

In general there can be no project products that do not have activities that create them. Wherever possible, we ought also to ensure the reverse: that there are no activities that do not produce a tangible product. Making sure we have identified all the things the project is to create helps us to ensure that all the activities we need to carry out are accounted for.

These products will include a large number of *technical* products including training material and operating instructions, but also products to do with the *management* and the *quality* of the project. Planning documents would, for example, be management products.

PRINCE 2 suggests that the PBS be presented as a hierarchy diagram. In practice it may be more convenient to produce a structured list.

The products will form a hierarchy. The main products will have sets of component products, which in turn might have sub-component products and so on. These relationships can be documented in a Product Breakdown Structure (PBS).

This part of the planning process draws heavily on the standards laid down in PRINCE 2. These specify that products at the bottom of the PBS should be documented by *Product Descriptions*, which contain:

- the name/identity of the product;
- the purpose of the product;
- the derivation of the product (that is, the other products from which it is derived);
- the composition of the product;
- the form of the product;
- the relevant standards;
- the quality criteria that should apply to it.

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**Case Study Example: PBS**

At IOE, Amanda finds that there is a standard PBS that she can use as a check-list for her own project.

Brigette at Brightmouth College has no installation standard PBS, although she can, of course, refer to various books for standard check-lists. She decides that one part of the PBS should contain the products needed to help select the appropriate hardware and software for the payroll application (Figure 2.2).

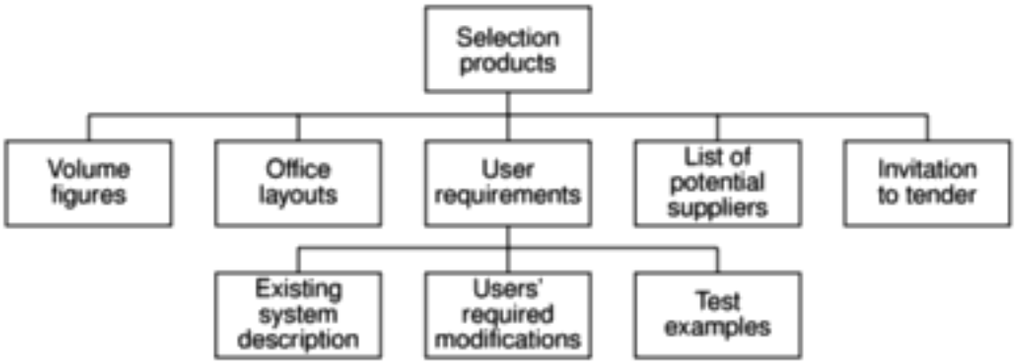


**Figure 2.2** *A fragment of the PBS for the Brightmouth College Payroll Project.*

### *Step 4.2: Document generic product flows*

Some of the products will need some other product to exist first before they can be created. For example, a program design must be created before the program can be written and the program specification must exist before the design can be commenced. These relationships can be portrayed in a Product Flow Diagram (PFD). Figure 2.3 gives an example.

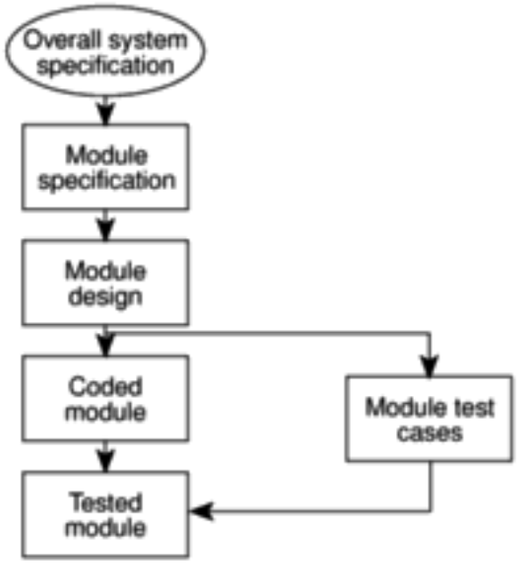


**Figure 2.3** *A fragment of a PFD.*

**Case Study Example: IOE has standard PFD**

At IOE, Amanda has a standard installation PFD. Many of the products that will make up Amanda's application will be of the same type: hence the same generic PFD will apply to each instance. It is pointless in these circumstances to draw up a separate PFD for each instance of the product.

**Exercise 2.2**

Draw up a possible Product Flow Diagram (PFD) based on the Product Breakdown Structure (PBS) shown in Figure 2.2. This represents the products that will be produced when gathering information to be presented to potential suppliers of the hardware. The volume figures are for such things as the number of employees for whom records will have to be maintained.

This may be delayed to later in the project when more information is known.

*Step 4.3: Recognize product instances*

Where the same generic PFD fragment relates to more than one instance of a particular type of product, an attempt should be made to identify each of those instances.

**Case Study Example: identifying product instances**

Amanda decides that there are likely to be four major software modules needed in her application for which the PFD fragment in Figure 2.3 would be appropriate

The products that Brigette can identify at the present all have a single instance.

*Step 4.4: Produce ideal activity network*

In order to generate one product from another there must be one or more activities that carry out the transformation. By identifying these activities we can create an activity network, which shows the tasks that have to be carried out and the order in which they have to be executed.

**Case Study Example: Activity network for IOE Maintenance Accounts**

Part of the initial activity network for the IOE Maintenance Group Accounts project might look like Figure 2.4.

**Exercise 2.3**

Draw up an Activity Network for the Product Flow Diagram that you created in Exercise 2.2 (or the PFD given in the solution if you prefer!).

The activity networks are 'ideal' in the sense that no account has been taken of resource constraints. For example in Figure 2.4, it is assumed that resources are available for all four software modules to be developed in parallel.

### *Step 4.5: Modify the ideal to take into account need for stages and checkpoints*

The approach to sequencing activities described above encourages the formulation of a plan that will minimize the overall duration, or 'elapsed time', for the project. It assumes that an activity will start as soon as the preceding ones upon which it depends have been completed.

There might, however, be a need to modify this by dividing the project into stages and introducing checkpoint activities. These are activities that draw together the products of preceding activities to check that they are compatible. These checkpoints are sometimes referred to as milestone events. A checkpoint could potentially delay work on some elements of the project – there has to be a trade-off between efficiency and quality.

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**Exercise 2.4**

Amanda decides that after the four modules have been specified, the four specifications need to be carefully checked to see that they are consistent and compatible. Redraw the activity network in Figure 2.4 to reflect this.

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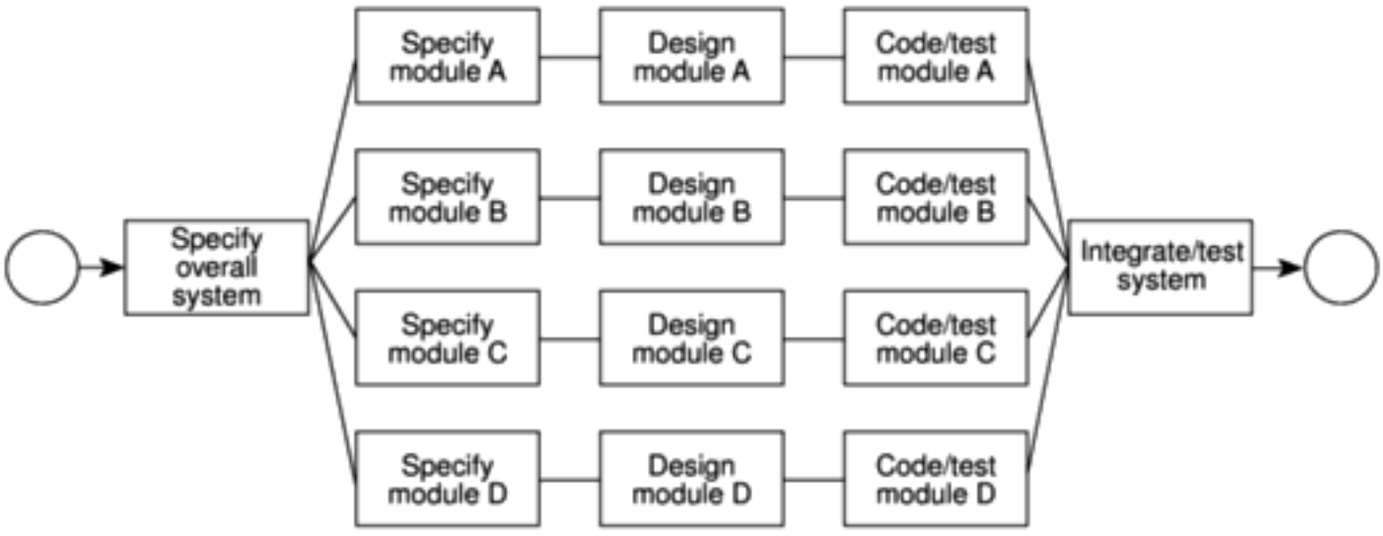


**Figure 2.4** *An activity network fragment for the IOE Maintenance Group Accounts project.*

## 2.7 Step 5: Estimate effort for each activity

### *Step 5.1: Carry out bottom-up estimates*

Some top-down estimates of effort, cost and duration will already have been done (see Step 3.6).

Chapter 5 on Software Estimation deals with this topic in more detail.

At this point, estimates of the staff effort and other resources required, and the probable elapsed time needed for each activity will need to be produced. The method of arriving at each of these estimates will vary depending on the type of activity.

The individual activity estimates of effort should be summed to get an overall bottom-up estimate, which can be reconciled with the previous top-down estimate.

The activities on the activity network can be annotated with their elapsed times so that the overall duration of the project can be calculated.

### *Step 5.2: Revise plan to create controllable activities*

The estimates for individual activities might reveal that some are going to take quite a long time. Long activities often make a project difficult to control. If an activity involving system testing is to take 12 weeks, it might be difficult after six weeks to judge accurately whether 50% of the work is completed. It would be better to break this down into a series of smaller sub-tasks.

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**Case Study Example: IOE Maintenance Group Accounts – breaking activities down into manageable tasks**

At IOE, Amanda has to estimate the lines of code for each of the software modules. She looks at programs that have been coded for similar types of application at IOE in the past to get some idea of the size of the new modules. She then refers to some conversion tables that the information systems development department at IOE have produced; these tables convert the lines of code into estimates of effort. Other tables allow her to allocate the estimated effort to the various stages of the project.

Although Brigette is aware that some additional programs might have to be written to deal with local requirements, the main software is to be obtained 'off-the-shelf' and so estimating based on lines of code would clearly be inappropriate. Instead, she looks at each individual task and allocates a time. She realizes that in many cases these represent 'targets' as she is uncertain at the moment how long these tasks will really take (see Step 6 below).

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## 2.8 Step 6: Identify activity risks

### *Step 6.1: Identify and quantify activity-based risks*

Chapter 7 on Risk touches on this topic in more detail.

Risks inherent in the overall nature of the project have already been considered in Step 3. We now want to look at each activity in turn and assess the risks to its successful outcome. The seriousness of each risk and likelihood of it occurring

have to be gauged. At individual task level some risks are unavoidable, and the general effect if a problem materializes is to make the task longer or more costly. A range of estimates can be produced to take into account the possible occurrence of the risks.

*Step 6.2: Plan risk reduction and contingency measures where appropriate*

It is possible to avoid or at least reduce some of the identified risks. Contingency plans specify action that is to be taken if a risk materializes. For example, a contingency plan could be to use contract staff if a member of the project team is unavailable at a key time because of illness.

*Step 6.3: Adjust overall plans and estimates to take account of risks*

We can change our plans, perhaps by adding new activities which reduce risks. For example, a new programming language could mean that we schedule training courses and time for the programmers to practise their new programming skills on some non-essential work.

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**Case Study Example: Identifying risks**

As well as the four new software modules that will have to be written, Amanda has identified several existing modules that will need to be amended. The ease with which the modules can be amended will depend upon the way in which they were originally written. There is therefore a risk that they will take longer than expected to modify. Amanda takes no risk reduction measures as such but notes a pessimistic elapsed time for the amendment activity.

Brigette identifies as a risk the possible absence of key staff when investigating the user requirements as this activity will take place over the holiday period. To reduce this risk, she adds a new activity, 'arrange user interviews', at the beginning of the project. This will give her advance notice of any likely problems of this nature.

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## 2.9 Step 7: Allocate resources

*Step 7.1: Identify and allocate resources*

Chapter 8 on Resource allocation covers this topic in more detail.

The type of staff needed for each activity is recorded. The staff available for the project are identified and are provisionally allocated to tasks.

*Step 7.2: Revise plans and estimates to take into account resource constraints*

Some staff might be needed for more than one task at the same time and, in this case, an order of priority is established. The decisions made here can have an effect on the overall duration of the project when some tasks are delayed while waiting for staff to become free.

Ensuring someone is available to start work on an activity as soon as the preceding activities have been completed might mean that they are idle while waiting for the job to start and are therefore used inefficiently.

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**Case Study Example: Taking resource constraints into account**

Amanda has now identified four major software modules plus two existing software modules that will need extensive amendment. At IOE, the specification of modules is carried out by the lead systems analyst for the project (who in this case is Amanda) assisted by junior analyst/designers. Four analyst/programmers are available to carry out the design, coding and unit testing of the individual modules. After careful consideration and discussion with her manager, Amanda decides to use only three analyst/programmers to minimize the risk of staff waiting between tasks. It is accepted that this decision, while reducing the cost of the project, will delay its end.

Brigette finds that she herself will have to carry out many important activities. She can reduce the workload on herself by delegating some work to her two colleagues, but she realizes that she will have to devote more time to specifying exactly what they will have to do and to checking their work. She adjusts her plan accordingly.

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## 2.10 Step 8: Review/publicize plan

*Step 8.1: Review quality aspects of the project plan*

A danger when controlling any project is that an activity can reveal that an earlier activity was not properly completed and needs to be reworked. This, at a stroke, can transform a project that appears to be progressing satisfactorily into one that is badly out of control. It is important to know that when a task is reported as completed, it really is – hence the importance of quality reviews. Each task should have 'exit requirements'. These are quality checks that have to be passed before the activity can be 'signed off' as completed.

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**Case Study Example: IOE existing quality standards**

Amanda finds that at IOE, the Quality Standards and Procedures Manual lays down quality criteria for each type of task. For example, all module design documentation has to be reviewed by a group of colleagues before the coding of that module can commence.

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**Exercise 2.5**

Brigette has no installation standards to help her apart from the minimal ones she has written herself. What quality checks might Brigette introduce to ensure that she has understood the users' requirements properly?

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*Step 8.2: Document plans and obtain agreement*

It is important that the plans be carefully documented and that all the parties to the project understand and agree to the commitments required of them in the plan.

## 2.11 Steps 9 and 10: Execute plan and Lower levels of planning

Once the project is under way, plans will need to be drawn up in greater detail for each activity as it becomes due. Detailed planning of the later stages will have to be delayed because more information will be available nearer the start of the stage. Of course, it is necessary to make provisional plans for the more distant tasks, because thinking about what has to be done can help unearth potential problems, but sight should not be lost of the fact that these plans are provisional.

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**Case Study Examples: Lower level planning**

While work is going on with the specification of the individual modules, Amanda has some time to start planning the integration tests in some detail. She finds that, in fact, integration testing of two of the six new or amended modules will be independent of the others. Testing of these two can start when they are ready without waiting for the remainder.

When Brigette comes to consider the activity 'draft invitation to tender', she has to familiarize herself with the detailed institutional rules and procedures that govern this process. She finds that, to draft this document, she will need to obtain some additional information from the users.

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## 2.12 Conclusion

This chapter has presented a framework into which the techniques described in the other parts of the book should slot. Any planning approach should have the following elements:

- the establishment of project objectives;
- the analysis of the characteristics of the project;
- the establishment of an infrastructure consisting of an appropriate organization and set of standards, methods and tools;
- the identification of the products of the project and the activities needed to generate those products;
- the allocation of resources to activities;
- the establishment of quality controls.

Project management is an iterative process. As the time approaches for particular activities to be carried out they should be replanned in more detail.

## 2.13 Further Exercises

1. List the products created by the Step Wise planning process.

2. What products must exist before the activity 'test program' can take place? What products does this activity create?

3. An employee of a training organization has the task of creating case study exercises and solutions for a training course that teaches a new systems analysis and design method. The person's work plan has a three-week task 'learn new method'. A colleague suggests that this is unsatisfactory as a task because there are no concrete deliverables or products from the activity. What can be done about this?

4. In order to carry out usability tests for a new word processing application, the software has to be written and debugged. User instructions have to be available describing how the application is to be used. These have to be scrutinized in order to plan and design the tests. Subjects who will use the application in the tests will need to be selected. As part of this selection process, they will have to complete a questionnaire giving details of their past experience of, and training in, typing and using word processing applications. The subjects will carry out the required tasks using the word processing application. The tasks will be timed and any problems the subjects encounter with the application will be noted. After the test, the subjects will complete another questionnaire about what they felt about the application. All the data from the tests will be analysed and a report containing recommendations for changes to the application will be drawn up. Draw up a Product Breakdown Structure, a Product Flow Diagram and a preliminary activity network for the above.

5. Identify the actions that could prevent each of the following risks from materializing or could reduce the impact if it did occur:

   (a) a key member of the programming team leaving;

   (b) introducing a new version of the operating system that has errors in it;

   (c) a disk containing copies of the most up-to-date version of the software under development being corrupted;

   (d) system testing unearthing more errors than were expected and taking longer than planned;

   (e) the government changes the taxation rules, altering the way that Value Added Tax (VAT) is to be calculated in an order processing system under development.

6. Read Appendix A on PRINCE 2. To what extent could the PRINCE 2 project management standards be usefully applied to the Brightmouth College payroll?