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Overview

Effective project management requires effective planning and control. Effective planning and control requires:

- the clear definition of the project;
- a robust approach to planning the project;
- selection and use of the appropriate scheduling techniques;
- rigorous monitoring that enables proactive control of the project;
- a sound basis for this is good record keeping, which also facilitates the virtuous feedback and learning cycle.

This book offers tried and tested techniques and principles covering these aspects of project management. It introduces some lesser-known and emerging practices, some of which will move into mainstream project management in the years to come.

The book is structured into five main sections reflecting these requirements, and a brief introduction to each section and chapter follows.

1.1 Part One: Definition

At a strategic level, there are a number of fundamental questions that need addressing:

- Why is the project required?
- What does the customer want the project to deliver?
- How will the success of the project be measured?
- How will the project be procured?
- What is the attitude of its customers (or its funders) to risk?
- Similarly, what is their attitude to quality (including scope)?
- When does the client want the capability delivered by?

Part One of this guide describes the principal processes that define the project, and answers these questions.

The first topic dealt with is the creation of the business case (Chapter 2). This is the starting point in the life of any project, and it is a vital step in ensuring that the project is viable, affordable and desirable. It sets the scene for all that follows – the planning, scheduling, monitoring and control, and, not least, the delivery of the project.

Assuming the business case is approved, the scope of the project must be defined and agreed with all stakeholders (Chapter 3). Defining the scope will begin the process of making key decisions about the project, defining and selecting from various options until a preferred solution is agreed and approved.

Once the scope has been agreed, the details of the requirements are determined. See Chapter 4 (*Requirements management*).

Stakeholder management (Chapter 5) is dealt with briefly, as the responsibility for this falls mainly on the project manager (see Soft Issues – Project Management Time in Figure 1.1).

Chapter 6, the final chapter in Part One (*Project familiarisation*), is a checklist of the project documentation that has been created during the definition stage. These are the key documents that must be read and understood to enable the planning – and subsequent processes detailed in the guide – to be carried out in an informed way.
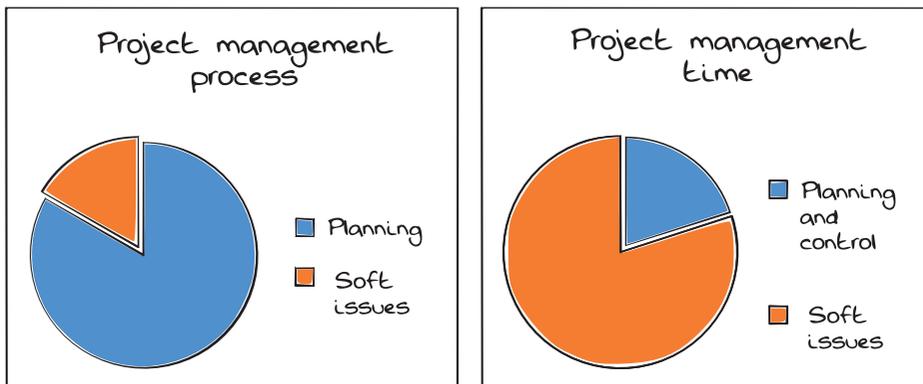
Figure 1.1 The importance of planning and control in project management

1.2 Part Two: Planning

The planning phase of the project needs to answer some fundamental questions, such as:

- How much will the project cost?
- How long should the project take?
- Are there benefits to finishing early, and what are they?
- What are the costs of an earlier completion, and do they outweigh the benefits?
- On the other hand, how is funding released, and are there any limits on this?
- How will the performance of the project be measured, through all its phases?
- Can the project be delivered safely?

Chapter 7 introduces planning – the team approach to working out how to deliver the project. After discussing and defining the difference between planning and scheduling (a point worth making to help define the two terms) – these terms are often used interchangeably, but they are two very different processes and require different skill sets – the opening chapter of this section goes on to discuss the principal components that will make up the overall project plan – the various schedules and narratives. It is important to understand these at the planning stage, and, whilst they are introduced here, they will be covered in further detail in Part Four.

Chapter 8 defines and discusses the purpose of the various breakdown structures that are used in project management. We also propose a method of creating these structures. Chapter 9 introduces the concept of dependency management. This theme is returned to in Part Four, when the specifics of schedule dependencies are defined in greater detail.

A critical concern of all project management must be the highest standards of health, safety and environmental management (Chapter 10). We cannot do justice to this topic in a book aimed across all industries, but it is a very important aspect when planning any project. It will have a fundamental influence on the project – how it is planned, designed/engineered and constructed.

Finally, in Chapters 11 and 12, we discuss the cost-estimating process and the budgeting process that follows it. The former is an essential step in the definition and planning (and, indeed, scheduling) of the project. The latter is essential in the creation of targets and baselines that will form the basis of monitoring and control.

1.3 Part Three: Scheduling

A fundamental question is: who owns the schedule? The answer is, of course, that it is the project manager, with the support of the whole project team. The schedule is created by collating the thoughts of many people; the specialist

planner's role is to form these thoughts into a coherent schedule, and then to communicate it effectively. This will include:

- developing logistical plans;
- setting up the schedule in planning software;
- deciding how the plan is to be presented and communicated.

Part Three commences with a chapter (13) setting the scene; it discusses the purposes of scheduling and some of the basic philosophies and structures. Chapter 14 describes the various types and purposes of schedules that might be used on a project.

Chapter 15, entitled *Schedule design*, details the various elements of a schedule that need to be considered prior to commencement of any scheduling: for example, what type of activity should be used, or what coding and other structures should be applied.

Chapter 16 addresses the construction of the schedule. It is this guide's contention that all scheduling starts with the creation of a logic-linked network. On simple projects a bar (or Gantt) chart may suffice, but we have chosen to describe these as outputs, or communication tools, rather than scheduling tools in their own right. We believe this is consistent with current practice. Within this chapter we discuss not only networks but also how durations may be calculated, the importance of considering and scheduling resources, and how schedules are interfaced with other stakeholders.

Chapter 17 follows with a number of suggestions about how the schedule is communicated – from the aforementioned bar charts through to line of balance and time chainage charts that are useful in particular circumstances. One very important and sometimes overlooked document is the schedule narrative. This document serves to explain and clarify the planning and scheduling effort that has resulted in the (suite of) schedule(s) that have been created. Without this, the project cannot be clearly understood. We suggest appropriate contents for this narrative.

The final part of the generic process is schedule review (Chapter 18), describing the basic and detailed checks that should be made on the plans and schedules.

Turning once again to the question of who owns the programme, the final two chapters of this part (Chapters 19 and 20) deal with two emerging practices that have an important part to play in sharing the planning and the schedule with the project team: the agile approach, used mainly in software development, and the building information modelling (BIM) approach for use in asset design,

construction and management. The latter is mandated for use in all government procurement activity from 2016, so it is very likely to grow in significance over the coming years.

1.4 Part Four: Monitoring and control

Once the project is in its delivery phase, there are four fundamental questions that project stakeholders will ask of the project manager:

- Where are we?
- What has it cost to get here?
- Where are we going?
- How can we correct any problems?

The first question (Where are we?) may be decomposed into further questions such as: Are we on schedule? If not, where have the delays occurred? What caused the delay? Who is responsible, and what effect will it have on the project? Finally, what can be done to recover?

The second question (What has it cost to get here?) may also be broken down into similar questions: Where and why did any over or under spend occur? Who is responsible and how will we recover?

The question 'Where are we going?' may be considered in terms of time (When are we going to finish?), cost (What is it going to finally cost?) and quality (Will the finished product do what we intended?). The analysis of current trends will enable forecasting and/or challenge on these matters.

The fourth and final question (How can we correct any problems?) also requires project-specific experience and very often innovative thinking, topics that this guide does not, indeed cannot, cover. The monitoring and control process provides the basis for asking the right questions, and perhaps the basis for answering them.

The chapter on baselines (Chapter 21) could be a section in its own right, as it is the pivot between the planning and scheduling effort and the processes of monitoring and control. It is, however, a useful introduction to performance management, and touches on issues of change and other forms of control that are dealt with later in this part of the book.

Performance reporting (Chapter 22) covers the collection of progress and cost information and how this is turned into useful management data. Various

reporting techniques are discussed: first, variance reports that simply measure differences, exposing them (hopefully) to potential management action; second, a category that we have called 'performance analysis methods' that includes potentially the most valuable reporting of all, earned value analysis. As stated in the earlier purpose section of this guide, this book does not supersede the APM's own *Earned Value Handbook*, and readers with a further interest in this subject should refer to that guide. However, this guide does cover the basic principles of earned value.

Cost control is given its own chapter (Chapter 23), and, although it is covered with some brevity, the fundamental principles are discussed.

After the project has started, the project needs to react to progress made and re-plan as necessary. This is often the driver of short-term planning (although breaking plans into greater levels of detail (or 'densities') is also a function of this). In Chapter 24, we outline this process.

Chapters 25 and 26 discuss two processes that will actually be active throughout the whole life of the project. The former discusses change management, and the latter gives an overview of risk management. This chapter provides details of the QSRA and QCRA processes, which are the quantitative analyses of schedule and cost, respectively (hence the acronyms). These are tools that check the initial and ongoing robustness of the project plans.

The last chapter in Part Four (Chapter 27) discusses forensic analysis and delay and disruption analysis.

1.5 Part Five: Record keeping and learning

Record keeping (Chapter 28) is vital to provide a comprehensive history of the project. It forms both the basis of updating the schedules and plans for performance reporting, and to enable forensic analysis should it be necessary. It provides the basis of much of the learning from the project that can be used to improve future projects. Document management (Chapter 29) ensures that this and all other relevant project information is available to those who need it.

The closely allied (but separate) processes of handover and closeout of the project are dealt with in Chapter 30. The handover process ensures that the project and its obligations are complete and signed off; closeout essentially closes down all the support structures and commercial settlement of the project.

The final chapter of the book deals with another process that exists throughout the life of the project: lessons learned (Chapter 31). This includes both hard and

soft data. An example of the former would be productivity outputs achieved; an example of the latter might be an analysis of why the outputs were at the levels achieved.

1.6 A note on the Contents, Index and Glossary

We have included comprehensive contents and index to facilitate easy referencing throughout the book. This is in keeping with the belief that this is a guide to dip into rather than read cover to cover (although the reader is welcome to try!). Cross referencing in the book is kept to a minimum, and as a result there is a small amount of repetition, but in general a familiarity with the structure of the book will aid navigation through it. As stated in the preface, we have tried to only use plain English in this guide. However, when writing about technical subjects, there are always going to be words used that the reader is not familiar with. In these instances we have highlighted the word in blue, and added a definition in the glossary.

1.7 Management issues

There are many other factors that an organisation needs to consider that cannot be covered by this guide, but are fundamental to successful delivery of projects; these include:

1.7.1 Behaviour and resources

The behaviours within the organisation must allow proper recognition, time and resource to allow the planning and control processes to happen. Making sure that there is a development route for project teams such that the organisation/ project has suitably qualified and experienced people is similarly important.

1.7.2 Processes and tools (scheduling software)

Each organisation must set down its own planning and scheduling processes. As with all processes, making sure that planning and control processes are audited to check for appropriate implementation is important. Processes must be robust

enough to deliver the project efficiently, but scaled to suit the size and complexity of the project as appropriate.

Some research and effort are required to ensure that the tools used and their configuration are suitable for the organisation or project and the team who will be using them. In some industry sectors a big consideration will be client expectations, and this cannot be ignored.

1.7.3 Common sense

The most important piece of advice of all is to make sure that the guidance in this book is interpreted with common sense. Any action or process that is established must be appropriate and must show a benefit that outweighs the cost of its implementation. This cost is not just in financial terms, but also in the use of the available time of the team. Projects of differing complexity will require different implementations: the highly complex and risky project will require something close to everything in this guide! A simple project will only need to apply the principles, often in a very informal way. It is up to the skill and judgement of the organisation's senior management to determine what is relevant.