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CHAPTER 7

Risks can occur at any stage in a project. Some are associated with particular tasks and others originate from outside the project and can manifest themselves without warning. Generally speaking, a risk event that occurs late in a project can be more costly in terms of time and money than a similar event nearer the start of the project. Some projects, because they are small or similar to projects that the contractor has undertaken in the past, might not need special attention to risk management other than considering some of the insurance issues discussed later in this chapter. However, for any project that breaks new ground or is complex and large, a risk management strategy must be developed, ﬁrst to identify as many potential risks as possible and then to decide how to deal with them. For very large projects it might be necessary to appoint a risk manager, who can devote all or most of his or her time to ensuring that a comprehensive risk strategy is put in place and then reviewed from time to time throughout the project to ensure that it remains valid. If a project support ofﬁce exists that is a logical place for the risk management function to reside. It is almost certain that some tasks will not be completed in line with their duration estimates and budgets. Some might exceed their estimates, whilst others could be ﬁnished early and cost less than expected. As explained in the previous chapter, statistical tools such as Monte Carlo analysis can be used to attempt an assessment of the probability of the project ﬁnishing by its target completion date or of the intended return on investment being realized. However, those measures deal with uncertainty rather than with risk. Risks are unforeseen (and often unforeseeable) events that can result in a change of project plans or even total project failure. Once identiﬁed and listed, risks can be ranked according to the probability of their occurrence and the severity of the impact if they should occur. This process will eliminate the most improbable risks arising from brainstorming, but it should bring to the fore those risk events that are most likely to happen or which would have the greatest impact on the project. For this analysis it is necessary to consider the possible causes and effects of every risk. Risk analysis can be qualitative or quantitative. Qualitative risk analysis involves considering each risk in a purely descriptive way, to imagine various characteristics of the risk and the effect that it might have on the project. Qualitative risk analysis goes at least one stage further than qualitative analysis by attempting to quantify the outcome of a risk event or to attach a numerical score to the risk according to its perceived claim for preventive or mitigating action. Failure mode and effect analysis has also been imported into project risk management from reliability and quality engineering, but this method is possibly more helpful because it starts by considering possible risk events (failure modes) and then proceeds to predict all their possible effects. Figure 7.2 shows a simple FMEA chart. Item 1 in this example is related to the car engine problem in the ﬁshbone diagram (Figure 7.1) but now we look beyond the simple fact of engine failure to consider the possible consequential effects of the engine failing to start. A ﬁnal column allows space for preemptive actions to be recommended that might mitigate or prevent damage from the risk. Only three items are shown in Figure 7.2 but there might be hundreds of items in a large, complex project. Another column is sometimes added to show when in the project life cycle the risk is most likely to occur. The chart illustrates a qualitative process because the characteristics of each risk are considered, but there is no attempt to give each risk a priority ranking number or to quantify the effects if the risk should occur. Quantitative analysis methods attempt to assign numerical values to risks and their possible effects. They often examine the probable impact on project time and costs. Alternatively, the evaluation process can produce a ranking number for every identiﬁed risk. Ranking numbers denote the priority that a risk should claim for management attention and expenditure on preventative measures. Although all quantitative methods produce actual numbers they can give a false sense of precision. It has to be remembered that the results are based on estimates, assumptions and human judgement. Those contributing assessments might be fundamentally ﬂawed, mistaken or simply too difﬁcult for any person to make with any degree of certainty. Some assessors use weighted parameters. For example, it might be considered that the severity of the risk should play a higher part in deciding ranking priority. So the severity column could be marked on a higher scale, say from 1–10. Item 2 in Figure 7.5 might then be marked 9 on this extended scale, which would increase the ranking factor for this item from 15 to 27. Although not usual practice, a case might be argued for allowing zero scores in the ‘Chance’ and ‘Severity’ columns. That could, of course, result in a total ranking factor of zero. That would be one way in which to dispose of some of the more outlandish risk events identiﬁed during an anything goes brainstorming session.

The ﬁnancial impact of many risks can be offset by insuring against them. The client pays the insurance company a premium for this service, and the insurer might itself choose to spread the risk by sharing it with one or more other insurance companies. Figure 7.7 shows that managers do not enjoy complete freedom of choice when deciding which risks should be included in their insurance portfolio. The FSA regulates and authorizes all insurance providers (insurance companies) and insurance intermediaries (brokers). It is illegal for someone or a ﬁrm to deal in insurance unless they are regulated and authorized by the FSA. Legal requirements oblige companies to obtain adequate insurance cover against some risks. These obligations arise either from various government laws and regulations or from conditions contained in a binding commercial contract.

CHAPTER NINE

An effective organization will have clear lines of authority and every member of the project will know what he or she is expected to do to make the project a success. This is part of the management communication framework needed to motivate all the staff employed. A well-motivated group can be a joy to work with. A badly informed group, with vague responsibilities and ambiguous levels of status and authority, is likely to be poorly motivated, slow to achieve results, costly to run and extremely frustrating to work with. The complement of good management communications is the provision of adequate feedback paths through and across the organization. These facilitate cooperation and coordination. They allow progress to be monitored and difﬁculties to be reported back to executive management. They should also give all participants access to the relevant experts for advice or instruction on technical and commercial difﬁculties. There will be employees who feel aggrieved when they ﬁnd that their names are not included on the chart, which they perceive as a personal insult. Those people will believe that they have been overlooked and that their roles and are not appreciated as being sufﬁciently important. The issue of a new organization chart can also give rise to feelings of envy or injustice when individuals feel that their particular box should have been placed higher up in the hierarchical pecking order. At least one company has attempted to solve this problem by issuing circular charts, but that is a not a complete solution because those nearest the outer rim of the circle might feel that they should be nearer the center. Work scheduling and control must take into account all the activities needed to bring the project to a successful conclusion (including all the software tasks, such as writing computer programs and preparing operating and maintenance instructions). Some of the items purchased by the company as part of the project must themselves be considered as special, and they too will have to be brought into the control function. Some of those purchased items might be sufﬁciently complex for their suppliers to manage their design and manufacture as projects in their own right. Cost control (a basic factor in achieving proﬁtability) has become more complex. Cost and management accountants are not the only contributors to this process; they must be helped by specialists who can deﬁne the total work content in detail and then report on achievement and cost implications as the project proceeds. As instructions are issued within departments and from one department to another, information must be fed back along the communication channels to signal the results obtained as each instruction is carried out. These feedback data are used to correct any errors discovered in the design drawings and for the essential task of controlling the general progress of the project. The weak matrix can encourage conﬂicts. For example, different project managers might compete with each other in claiming attention and resources for their own projects, and they can also come into conﬂict with the departmental managers over the allocation of people, machines and other facilities to project tasks. An additional complication is that functional departments usually have work, both routine and occasional, that is not connected with any current project. The departmental managers might decide, without agreement from the project managers, to give non project work priority over project tasks. The ‘balanced matrix’ (or overlay matrix) is very similar to a weak matrix and is sometimes described as such. In the balanced matrix, there is a declared balance of power and authority between the project managers and the functional department managers. Project and functional managers are expected to collaborate constructively and allocate personnel and other resources to tasks according to genuine priorities to ensure the successful outcome of all projects. This is perhaps the most common form of matrix. It is elegant in theory and has many advantages over other forms of organization. It is not however, as some have claimed, a universal solution for all projects. All organization forms have their advantages and disadvantages. In a ‘project matrix’ the authority of each project manager takes precedence over the authority of the functional managers, at least as far as the allocation and progressing of work is concerned. In a ‘second ment matrix’, which is the strongest form of the matrix, the functional managers must nominate and assign members of their departments to work full-time for the project managers. The people assigned report principally to their respective project managers for as long as each project manager needs them (although they might have to remain physically located in their home departments). The resulting task force should be a powerful and effective management team, with all the expertise and authority needed to give the project the best chance of success. Although the project might still depend on the use of resources and facilities shared with other work, the seniority of the task force members will ensure that all critical project tasks get top priority. Suppose, for instance, that the machine shop is represented on the task force by its manager or a deputy. Then, when a critical project task requires the use of a machine that is used heavily for other work, the project task force leader is provided with a direct line of authority over the use of that machine through the senior machine shop delegate who is serving on the task force. It must be said that project managers do not always enjoy the luxury of being able to organize their own workforce. They are more likely to be appointed to an organization that either exists already or has been established by more senior managers. In both cases the project manager has to accept the organization as a fait accompli. For some management and IT projects carried out for UK Government departments, even the senior management may have to suffer the restriction of being forced to work under PRINCE2TM. In any project organization that is complicated by the number of different participating companies, it makes sense to nominate one individual in each sub organization (including the customer) as the principal local information and communications coordinator. Each sub organization within the overall project organization is likely to have its own project manager and they will often be able to nominate and supervise an appropriate information coordinator. These coordinators can ensure that all signiﬁcant incoming documents and other communications are directed to the responsible recipients for action, followed up where necessary, and recorded for safekeeping and subsequent retrieval. E-mail and other electronic messages are a little more difﬁcult to control and can bypass ofﬁcial communication channels but provision should be made in procedures for all material with contractual or signiﬁcant technical content to be seen by the coordinator.