

## Learning Objectives

- Understand the need to carry out project closure
- Discuss the problems that may arise if proper project closure is not carried out
- Assess the activities needed to be performed to close a project

### 14.1 Introduction

All projects are by definition temporary endeavours. Therefore, every project must come to an end sometime or other. It is the responsibility of the project manager to decide the appropriate time to close a project. Once it is decided to close a project, the project manager needs to ensure that the project is properly closed by carrying out the project closure activities and this forms the last phase of the project management life cycle. Unless project closure activities are properly carried out and that too at an appropriate time, several problems may arise. We discuss these problems, later in this chapter. We also discuss various project closeout activities.

Project closeout activities can broadly be classified into administrative closure and contract closure activities. The contract closure activities involve verifying that all the terms of the contract with the customer as well as various subcontractors are met and are satisfactorily closed. It may be mentioned that in many projects, especially in the large ones, subcontractors are engaged to either fully perform or assist with various project work such as hardware maintenance, development or testing of certain components and providing specific consultancy. With respect to the contract closure with the subcontractors, it needs to be verified whether they have performed as per the requirements and the terms of the contract are met. On the other hand, administrative closure activities consist of ensuring that all of the project deliverables are archived and the project know-how are transferred to other personnel and are properly documented and archived. In case of a multi-phase project, the various closeout activities may have to be carried out at the end of every phase.

In this chapter, we first discuss the reasons for project closure and a few other issues associated with project closure. Subsequently, we discuss a closeout process in terms of the activities that need to be undertaken for proper project closure.

## 14.2 Reasons for Project Closure

There are two main reasons for closing a project. The most common reason for project closure is that all the project goals have been successfully accomplished. The project goals are considered to have been accomplished when all the project deliverables have been handed over to the customers, and the customers have confirmed that all project objectives have been met. The second reason for closing a project is that it has been found that the project is unlikely to achieve its stated objectives and has to be prematurely terminated. When it becomes evident that for a certain project, the project objectives cannot be satisfactorily met, it often makes sense to reach a negotiated project closure. According to a report, about a third of all projects are cancelled during the development phases. In any case, a negotiated closure where all concerned parties agree to the terms of a modified contract is preferred over a unilateral project closure. It needs considerable wisdom to determine when it is desirable to terminate a project, and then to carry out the closure. Otherwise, the project can become only a drag on the resources without achieving anything tangible.

There can be many reasons for prematurely terminating a project. A few important reasons for project termination are the following:

- ***Lack of resources:*** A project may need to be terminated when there is a severe resource shortfall. Resource shortfall for a project may occur due to several reasons. As an example, consider that in a certain company, there is a change in the top management of the company. The new management may show a lack of commitment to the projects initiated by the previous management. This may result in inadequate budget provisioning for a project. A few other reasons for resource shortfall include change of priority of the company due to business reasons, severe financial strain on the company and bankruptcy of the company.
- ***Changed business need of the customer:*** The business interests or business process of the customer may change after the initiation of the project. This may make the project outcome not useful in the changed situation. For example, suppose a customer after initiating a project to develop an inventory management software decides to outsource its entire inventory management activities to a third party, then the project outcome would be of little use to the company.
- ***The perceived benefits accruing from the project no longer remain valid:*** The expected quantum of benefits of developing a software might get altered after the start of the project. This may occur on account of certain events that may arise during the project execution. As an example, consider a project that has been initiated to develop a novel and unique software product. Now suppose during the project's execution, some competing products become available in the market. This may make the profit projections made during the feasibility study stage to become invalid and may necessitate project termination to reduce losses.
- ***Changes to the regulatory policies:*** Many times, external factors such as changes to the government's regulatory policies can have adverse impact on a project and may require the project to be terminated. For example, a company initiating project to develop a satellite telephone system may have to abandon the project if the regulatory policy formulated by the government is changed to disallow any satellite communication-based product in the country.

- **Key technologies used in the project becoming obsolete during project execution:** Suppose a software is being developed based on a few technologies at its core. Now consider that these technologies get outdated before the project completes. Then, there may be reason for the project to be terminated. As an example of such a situation, suppose a software to provide faster communication over a slower communication protocol may have to be abandoned, if a new version of the protocol gets released that by itself supports sufficiently fast communication.
- **Risks becoming unacceptably high:** Even when a project might have been initiated after carrying out thorough risk analysis, it may be found out after the start of the project that the risks to the project that could not be foreseen have become so high that continuation of the project would have serious adverse impact on the company such as unsettling its financial soundness, inviting negative publicity or posing health and safety hazards. In such situations, premature project termination may be recommended.

Even though there may be compelling reasons to prematurely terminate a project, before premature termination of a project, the company should carefully consider the various contractual and ethical issues. For example, when the personnel recruited for the project are not deployable in any other project, there may be ethical issues to be addressed before termination of the project can be contemplated. Another example could be that even when it becomes known that the customer of a project is facing acute financial hardship and is unlikely to pay for the project, it may first have to be examined whether termination of the project is possible under the terms of the contract. Even if the terms of the contract permit termination of the project, the impact of the project termination on the developing organization's reputation and client relationships must be considered.

## Why are projects not properly closed?

There are many real-life instances of project closures getting unduly delayed in several companies, and even project closure activities getting altogether skipped. In the following, we identify a few common reasons as to why project closure may be delayed or projects may not be properly closed.

- **Lack of interest by the project team:** Since project closing activities are usually rather mundane and require little creativity, the project team may lose interest to participate in these activities. This may especially be the case, if the project team members have already started working on other projects. There can also be reluctance on the part of the project team to actively participate in project termination activities for reasons such as apprehension about their redeployment, once the project gets closed.
- **Underestimation of how fast know-how can get lost and how much implicit knowledge exists with the team members:** Usually team members working on a project build up significant knowledge on the project and the associated technologies. One of the important outcomes of proper project termination is transfer of know-how to other employees of the company, documentation and archival of the knowledge pertaining to the project. However, it is often underestimated by the stakeholders as to how much knowledge pertaining to the project exists with the team members and how fast can the knowledge decay and get lost. Unless the knowledge with the team members is appropriately transferred to others or is archived, it may be lost forever. If the project manager and the other stakeholders overlook this, they may get busy with other activities and accord low priority to project closure.
- **Emotional factors:** After working for some time on a project, it may be possible that the team members and the project manager may become emotionally attached to the project and would want the project to continue as long as possible.
- **Indecision regarding project closure:** Often some tough decisions might have to be taken by the project manager and the senior management regarding projects facing premature termination. At times, they may delay taking the required decisions, thereby, letting the project to run longer than necessary.

## Problems of improper project closure

When projects are either not closed properly at the appropriate time or are not closed at all, several problems can arise. Some of the important problems that may be faced include the following:

- *Time and cost overrun:* If project termination is delayed, the project as a cost centre runs up expenditure in the meanwhile, leading to cost overrun. Also the project duration appears to be longer than what it should actually be.
- *Locking up valuable human and other resources:* When there is delay in closing a project, redeployment of project personnel and other resources gets delayed. As a result, valuable resources and manpower that could have been gainfully utilized in other projects gets wasted.
- *Stress on the project personnel:* The project personnel often lose out on experience that they could have gathered on other projects on which they might have been deployed, had the project closeout occurred at the appropriate time. The feeling of not doing anything challenging, missing out on the learning opportunities, and the impact of these on their future career can be stressful for the team members.

## Issues associated with project termination

The problems with project termination are two-fold. One is emotional and the other intellectual. The emotional issues can concern both the team members and the clients. The emotional issues that the team members may experience include the uncertainties and apprehensions concerning their assignment to the next project. This may manifest as general loss of interest in work and lack of enthusiasm to perform the remaining project work. There can also be diversion of attention. The team members may pay more attention to issues such as getting reassigned to a project of their choice and the project work can take a back seat. On the client side, there can be a sudden change in attitude and loss of interest in the project. The client may even change the personnel dealing with the project, and thereby causing further disconnect and difficulties in project closure.

The intellectual project termination problems may include handling some sensitive issues. When a project is to be prematurely terminated, the terms of contract and the list of deliverables need to be renegotiated. Also, even when some deliverables and tasks that are considered to be not necessary any more, however, before dropping these it needs to be verified with the client. If any subcontractors have been deployed in the project, then the outstanding commitments with the subcontractors need to be renegotiated. Also, the closure decision has to be effectively communicated to all stakeholders.

## 14.3 Project Closure Process

Effective project closure requires certain sequence of steps to be carried out. We discuss these steps in the following. However, before the project closure process can be initiated, the decision regarding closing the project needs to have been taken in consultation with the top management. For successful projects, it is expected that the requisite technical documentation, user manuals, testing and user training should have been completed and it should have been ensured that the project outputs are usable by the customer without any difficulty. If outside vendors have been subcontracted in the project, then it has to be ensured that all work performed by them and all the deliverables given by them are acceptable. It also needs to be ensured that administrative activities such as settling their claims and archiving their deliverables for future use have been accomplished.

For a project facing premature termination, the project manager in consultation with the top management and the customers has to take the decision as to whether to terminate the project immediately or to keep it under

watch for some more time. For both normal closure and premature termination categories of projects, it has to be ensured that there are no further obligations, and the project closure activities can proceed to achieve taking stock of the accomplishments and the shortfalls, transfer of know-how and documentation and archival of knowledge. The following steps form a typical project closure process:

- Getting client acceptance
- Archiving project deliverables
- Preserving project know-how
- Performing a financial closure
- Performing postimplementation project review
- Preparing postimplementation review report
- Releasing staff

In the following, we elaborate the above steps of the project closure process.

### **Getting client acceptance**

The mechanism for client acceptance varies widely across different types of projects. When the client is a sister organization, or another department in the same organization, usually no formal record for acceptance of the project deliverables is required. In this case, the acceptance tends to be informal and gets conveyed in meetings. However, when the project client is an external organization, and especially when the project was awarded through a formal contract awarding process, a formal procedure for accepting the project deliverables is needed. In this case, the client approval is obtained after a formal acceptance testing by the client and a written acceptance of the project deliverables is required. In case of premature termination, negotiation with the client has to be made regarding the deliverables to be included in the reduced scope of the project. The client acceptance of these reduced set of deliverables is to be obtained.

### **Archiving project deliverables**

The project documents are usually archived electronically, so that these can be easily retrieved whenever required in the future. For example, the documents might have to be retrieved when the company undertakes maintenance of the delivered software or when a similar software product needs to be developed for different clients. The project archive should be properly documented, so that anyone trying to use the archive in the future does not face any problem. This document should at least contain information regarding the description of the documents archived, the application used to create the archive, the locations where these are stored and the persons to contact for further information.

### **14.4 Performing a Financial Closure**

Every project is usually undertaken based on some financial grant. This grant can have different components such as capital and contingency budgets. All these components have to be reconciled and book transfer of any capital goods that were purchased should be carried out. Also, it has to be ensured that all the subcontractor payments are complete and have been reconciled.

### **Postimplementation project review**

The goal of a postimplementation project review (sometimes called post-mortem) is to perform a critical analysis of the project in order to learn and improve, and avoid repeating the same mistakes in future projects.

By analysing past mistakes the project teams can learn to do better by improving their methods and practices. Not only the successful ones, even the unsuccessful projects implicitly hold a lot of information that can be identified, documented and disseminated to benefit other projects. The typical learning from the projects over the years, several guidelines regarding how to conduct postimplementation project review effectively, so that maximal learning is achieved in the minimal time has emerged. In the following, we discuss the steps of conducting a postimplementation project review.

- Conduct project survey
- Collect objective information
- Hold a debriefing meeting
- Prepare postimplementation review report
- Publish the report

**Project survey:** The objective of the project survey is to collect various types of information pertaining to the project, without compromising the confidentiality of the respondents. An electronic survey is usually very effective. The information is collected through a set of carefully designed questionnaire that can bring out the important process and management issues that have a strong bearing on the success or failure of the project. The following important points should be included in the questionnaire.

- *Project performance:* The set of questions pertaining to this should elicit qualitative comparison of project achievements with the plan.
- *Administrative performance:* The questions pertaining to this item are an evaluation of the administrative practices followed.
- *Organizational structure:* These pertain to any recommendations for changes to the organizational and team structure.
- *Team performance:* These pertain to the highlights of team performance and the obstacles faced.
- *Techniques of project management:* These get the feedback regarding the methods used for estimating, planning, monitoring and control.
- *Risk management:* How effective was the risk management practices that were followed.

Summarized feedback would be used during the debriefing meeting as a starting point for identifying lessons learned and best practices to use in future projects. It will also be included in the postimplementation report created at the end of project closeout process.

**Collection of objective information** A critical aspect of the post-mortem review is to collect various project metrics. Real data helps to focus discussions on most crucial issues during the post-mortem review. The different types of metrics that are collected include the cost metrics, schedule metrics and quality metrics.

A quantitative assessment of various parameters of a project allows evaluation of the project in more precise terms. Also quantitative measures allow comparison of different projects objectively and can help to identify the techniques and new initiatives that worked better and the ones that did not work well. The historical data can be used to fine tune the coefficients of the project estimation expressions being used. Besides contributing to the historical data of a company, these metrics can be used to determine any shortfall in the techniques used and can guide in improving the techniques. In the following we discuss a few important metrics.

**Estimated SLOC versus actual SLOC:** SLOC is a fundamental project parameter based on which other important parameters used for project planning such as effort and duration are estimated. The variations of

the estimated SLOC and the actual SLOC can be analysed and the size-estimation technique used can be fine-tuned and incorporated in carrying out the estimations for other projects.

**Estimated SLOC and effort versus actual SLOC and effort:** Effort is a vital project parameter based on which other project parameters such as duration and staffing level are estimated. Also, several project management activities such as project scheduling take place on the effort estimations. The variations between the estimated effort and the actual effort can be analysed to fine-tune the effort-estimation techniques being used.

**Extent of rework due to requirement changes:** The extent to which rework was needed due to requirement changes can be tracked and the factors which led to these can be identified.

**Estimated project duration versus actual duration:** The extent to which the estimated project duration differed from the actual duration can be determined and this result can be used to fine-tune the parameters of the estimation equation used.

**Percentage of errors detected at each stage:** Substantial savings in development effort and development cost can be achieved by detecting the bugs as soon as these are introduced in the different development stages. To achieve this, usually a series of bug detection filters are used throughout the development cycle. Examples of these bug detection filters are review, simulation and various strategies deployed for unit, integration and system testing. The extent to which these bug detection filters could detect the errors and the extent to which the errors were missed by the different bug detection filters are important data to be gathered. These data can be used to determine which bug detection techniques are more effective, so that more effort can be given and the ones which are not so effective and can be allocated less effort. Also, the effectiveness results can be used to fine-tune the bug detection techniques.

**Debriefing meeting:** A debriefing meeting is a preparatory meeting that helps to make the final project review meeting focused to the most relevant aspects. In this meeting, only the senior members of the team and a few select members participate. The summarized survey results and the collected objective data are circulated among the members beforehand and guide the topics covered during the meeting. After an initial briefing by the project manager, the discussions centre around various aspects of the completed project. The main objective of the meeting is to gain consensus on what was successful and what was not and identify the best practices and lessons learned. The debriefing meeting helps the project manager to obtain some direct feedback about the project.

**Final project review:** In addition to the project team, the project manager should consider inviting the project managers of related projects. It is usually a good idea for the project manager to distribute the summarized survey results to each participant in advance of the project assessment meeting, to allow them to come prepared to address the contents. This meeting usually addresses various issues arising out of project planning and tracking, the results of various development phases such as requirements analysis, specification, design and testing. It also discusses risk management, configuration management and quality management. Guided by the information collected in the previous steps, the project leaders determine the focus of the review discussions only on the relevant topics in various project activities. For example, if the collected data or the debriefing meeting data suggest schedule slippage, the discussions centre around how the schedule slippage could have been avoided. It should be remembered that fault finding or blaming individuals should be avoided.

## 14.5 Project Closeout Report

A project closeout report documents the important results obtained from various project closeout tasks. This report typically starts with a historical summary of the projects deliverables and baseline activities over the

course of the project. It subsequently presents the summary of the survey results and the quantitative data gathering about the project's performance. Finally, the results of the final project review are presented. As part of this, the reasons for variances from the baseline plan, lessons learned, best practices and disposition of project resources are highlighted. It also contains recommendations for improvement to be used by other projects of similar size and scope. In summary, the project closeout report is intended to provide a concise evaluation of the project.

**Result publication:** The project leader summarizes the positive and negative findings as well as the prescriptions for improvement. The summary is published so that all the teams can refer to it and also the management can take initiative for any necessary corrections based on it.

The important findings of the postimplementation project review audit can be published in a document. The document can be used to disseminate the lessons learned and to work as a reference for similar future projects. A typical way in which the postimplementation project review report can be organized is as follows:

- Project description: Information about the project, to give context
- What worked well
- The factors that impeded the performance of the project
- A prescription for other projects to follow

## Releasing Staff

This is the final step of the project closeout process. This is the last meeting before the project team members disburse to different projects. However, it is important that the project manager should have taken care that the team members have been assigned to proper projects according to their expertise and skill set. This meeting is also the ground for celebration before the team members disperse to different projects and for recognizing exceptional performance by the team members and recognizing the experience and proficiency gained by the team members.

## Conclusion

Project closing is the last phase of a project, when the project outputs are handed over to the stakeholders, contractual agreements properly taken care of, and project records elicited and stored for future reference. Unless a project is closed at an appropriate time, it can lead to several problems. Therefore, it is imperative that a project manager needs to identify an opportune time to close a project and carry out the project closure activities. The project closure activities can broadly be divided into contract closure and administrative closure. The contract closure activities concern ensuring the terms of every contract is met. On the other hand, the main objectives of administrative closure are to preserve the project documents, transfer the project know-how and document and archive these as much as possible and to conduct the project review and to document the lessons learned.

## Exercise

1. For each of the following questions, exactly one option is correct. Select the appropriate option.
  - (i) Which one of the following most accurately states the main aim of a postproject review?
    - (a) Validate overall progress to date against the budget and schedule.
    - (b) Capture knowledge and document it for future usage.
    - (c) Ensure all documentation is accepted and signed by the sponsor.
    - (d) Establish that project benefits have been identified.
  - (ii) Which one of the following is not an objective of the postimplementation review?
    - (a) To review the qualitative and quantitative data about the project
    - (b) To determine which practices worked well and which did not
    - (c) To fix accountability for performance shortfalls
    - (d) To suggest means to fine-tune various techniques used for project estimations
  - (iii) In the process of postimplementation project review, which one of the following is not a reason for collecting the data concerning the errors detected at various stages of development?
    - (a) To fine-tune the error-detection techniques used
    - (b) To determine which techniques worked well, so that more effort can be allocated to these
    - (c) To determine which techniques did not work well, so that less effort can be allocated to these
    - (d) To fix accountability for the errors committed at each stage of development
2. Explain the common reasons for delay in project closure. What problems can arise if the project closure is delayed?
3. Explain the different reasons for which a project may need to be terminated.
4. Suppose you are a project manager and have undertaken to develop a customized package for automation of various activities of an educational institute. Briefly explain the project closure activities that you would follow.
5. Explain the important reasons as to why projects are either not closed at all or closure is overly delayed?