Manufacturing and Service Operations Planning

Spring 2019

Project Management in Practice

C • H • A • P • T • E • R

7

Monitoring and Controlling the Project


PMBOK Guide

Project monitoring and control are, in some ways, simply the opposite sides of project selection and planning. The bases for selection as described in Chapter 1 dictate what to monitor and the details of planning identify the elements to be controlled. PMBOK covers these topics in Chapter 3 on Processes, but more explicitly covers the topic of controlling in Chapter 8 on Quality. *Monitoring* is the collection, recording, and reporting of project information that is of importance to the project manager and other relevant stakeholders. *Control* uses the monitored data and information to bring actual performance into agreement with the plan. Clearly, the need to exert proper control mandates the need to monitor the proper activities and elements of the project. Frequently, the distinction between monitoring and control is blurred, and their interaction often makes us think we are working on a single task, but they are quite distinct.

Although the data gathered from monitoring often serve many objectives—auditing, keeping management informed, learning from mistakes—these are all secondary compared to the purpose of control. The purpose of monitoring is to ensure that all interested parties have available, when needed, the information required to exercise control over the project through the use of tools such as the project portfolio process of Section 1.6. Thus, the key issue in designing an effective monitoring and control system is to create an information system that gives the project manager and others the information they need to make informed, timely decisions that will keep project scope as close as possible to the plan.

7.1 THE PLAN-MONITOR-CONTROL CYCLE

Managing a project involves continually planning what to do, checking on progress, comparing progress to plan, taking corrective action to bring progress into agreement with the plan if it is not, and replanning when needed. As noted previously, the fundamental items to be planned, monitored, and controlled are time, cost, and scope so that the project stays on schedule, does not exceed its budget, and meets its specifications.

This plan-monitor-control cycle constitutes a "closed-loop" process that continues until the project is completed. Figure 7-1,* illustrates the information and authority flows for such a cycle in an engineering project. Note that the information flows up the organization and the authority flows down.

Unfortunately, it is often the case that when particularly complex, challenging, or uncertain projects are initiated, the planning-monitoring-controlling effort is minimized so that "the real work" can be done. It is a great temptation to focus on doing something, anything, rather than to spend time on planning, monitoring, and controlling, especially if the stakes are high and the project is a difficult one. It is precisely such projects, however, that most desperately need a mature project manager, particularly one who realizes the importance of creating an effective planning-monitoring-controlling process. Only this will ensure that the project and its output are in full compliance with the law, as well as with the expectations of both senior management and the client.

We are familiar with many firms that incurred tremendous expense and large losses because the planning process was inadequate for the project tasks undertaken. For example, a retailer won a bid to supply a regional office of a national firm with a computer, terminals, and software. Due to insufficient planning, the installation was completed far beyond the due date with very inadequate performance. The project failure disqualified the retailer from bidding on an additional 20 installations planned by the national firm. Another firm in the construction industry ran 63 percent over budget and 48 percent over schedule on a

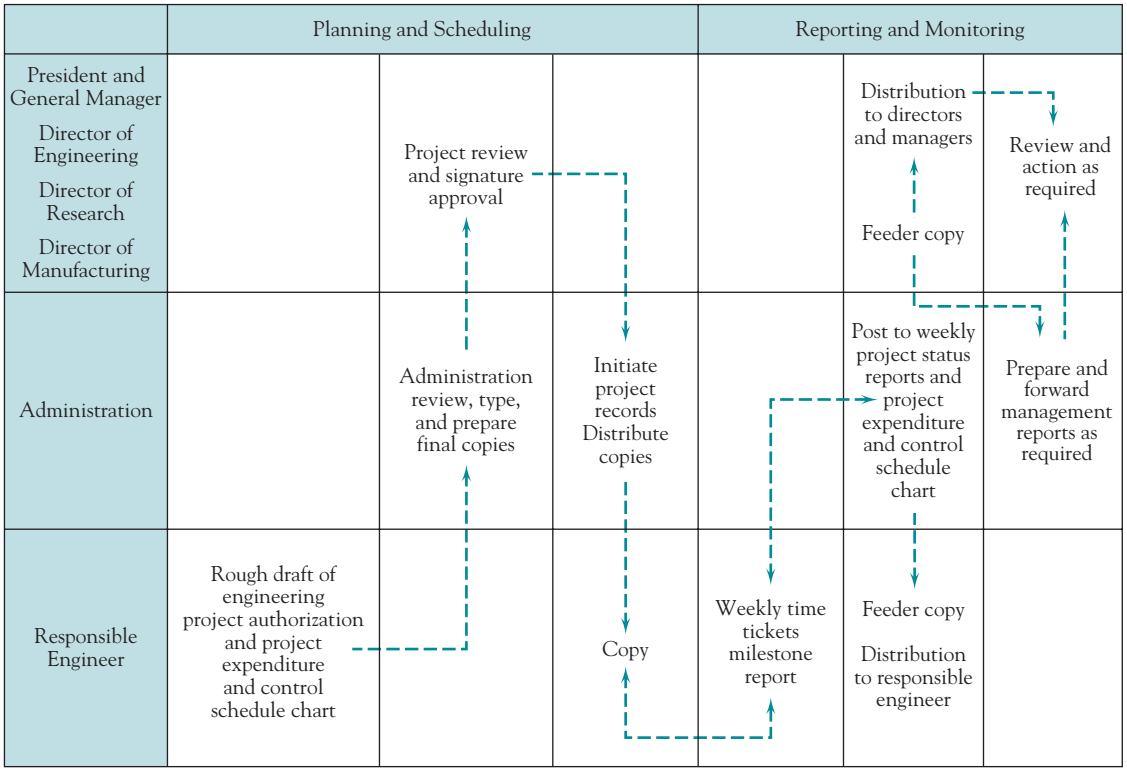

Figure 7-1 Project authorization and expenditure control system information flow.
Source: Dean, 1968.

*Dean (1968) was a classic work in the infant field of project management that proposed several major innovations in the field.

major project because the PM had managed similar projects several times before and "knew what to do without going into all that detail that no one looks at anyway."

Designing the Monitoring System

The key to setting up a monitoring system is to identify the special characteristics of scope, cost, and time that need to be controlled in order to achieve the project goals as stated in the project plan. The exact boundaries within which these characteristics should be controlled must be determined, as well as the specified performance characteristics for each level of detail in the project activities. In order to manage for overall project success, control must be exercised at the detailed work level for each aspect of project performance or there is no guarantee that the desired changes will result.

The project plan identifies what is being done, when, and the planned level of resource usage for each task and subtask in the project, so real-time data must be identified to measure achievement against the plan. Mechanisms to gather and store such data must be designed. In addition to collection systems for hard data, the monitoring system should include telephone logs, change tracking/control systems, documentation processes for both formal (e.g., meetings) and informal communications, and other such softer data collection systems. Once again, monitoring is the direct connection between project planning and control.

One way of linking planning and control is to monitor project progress at each milestone or phase of the project. Alternatively, progress can be monitored continuously based on the MSP Gantt chart, as shown in Figure 5-24 of Chapter 5. The original Gantt chart provides the baseline, and every time there is a change the "tracking Gantt" chart is updated to reflect the change. The software automatically adjusts all information to reflect the change. Another way illustrated later in this chapter is to use an "earned value" chart with its preestablished baseline. A fourth method is to monitor the critical chain buffers described in Chapter 6. Critical chain software packages such as ProChain® include buffer reports in their output which can direct the managers to problem areas where attention needs to be focused. The PM should remember to number and save each version of all monitoring documents to ensure a timely and accurate record for the project history that is discussed in Chapter 8.

It is temptingly easy to focus monitoring activities on data that are easily gathered rather than those that are important for control purposes. For example, too often it is the hard, "objective" measures that are monitored when soft, "subjective" data revealed in phone calls and water-cooler or happy-hour conversations are what are needed for proper control.

Too often, intensity of activity is measured instead of results. Because the measurement of project performance may be difficult, there is a strong tendency to let project inputs serve as surrogate measures of output, such as assuming that if 50 percent of the budget has been spent, and/or 50 percent of the scheduled time has passed, then 50 percent of the tasks must be completed. Far, far too often we measure cost (because it is easy to measure and both executives and accountants are used to dealing with cost), and completely ignore any consideration of the actual state of the task or project in terms of developing deliverables.

> It is essential to spend time up front designing the planning-monitoring-controlling process, especially for more challenging projects. The project plan is the primary document to guide the design of the monitoring system in terms of the detailed tasks and resources that need to be controlled in order for the project to achieve its time, cost, and output goals. Common errors in setting up monitoring systems are monitoring easy measures instead of relevant measures, monitoring activity in place of results, monitoring inputs as surrogates for outputs, and monitoring measures that don't change from one period to the next.