5. Once the change order has been completed and approved, the project plan should be amended to reflect the change, and the change order becomes a part of the project plan.

The process of controlling change is not complicated. If the project is large, a change control board needs to be constituted. This is a group representing all interested parties that processes all requests for change. For the typical small- or medium-sized project, however, the problem of handling change need not be complex. The main source of trouble is that too many PMs, in an attempt to avoid anything that smacks of bureaucracy, adopt an informal process of handling requests for change. Misunderstanding often arises from this informality, and the PM finds that the project becomes committed to deliver a changed output of extended scope, but will have to swallow the additional cost involved, and will have to scramble to meet the old, unchanged schedule.

The problems associated with dealing with change orders informally are particularly severe in the case of software and information system projects. The severity of the problem of dealing with change in software projects, it seems to us, is caused by two interrelated factors. First, software and information systems experts too often fail to explain adequately to the client the real nature of the systems they develop. Second, clients too often fail to make an adequate effort to understand the systems that become the lifeblood for their organizations. The development of *Agile* approaches for managing IT projects, or the use of the formal process for change suggested above, should help to reduce the degree of misunderstanding and disappointment.

A senior executive at a large industrial firm that carries out many projects each year sees control in a slightly different light. Noting that differences between plan and reality usually represent problems for project managers, he remarked: "If you are solving problems faster than they are arriving to be solved, you have the project under control. If not, you haven't."

Difficult as it may be, control is an important part of the PM's job on every project. Perhaps the most helpful advice we can give the PM is, in the language of the 1970s, to "hang loose." One effective PM of our acquaintance tells his project team, "I will not accept crises after 4:30 P.M. You are limited to one crisis per day. Crises are not cumulative. If

Project Management in Practice

Better Control of Development Projects at Johnson Controls

The Automotive Systems Group of Johnson Controls was having trouble controlling their product development programs with each project being managed differently, disagreements about who was responsible for what, projects failing because of rapid company growth, and new employees having trouble fitting into the culture. For a solution, they went to their most experienced and successful PMs and condensed their knowledge into four detailed procedures for managing projects. Because these procedures are now common to all projects, they can be used to train new employees, standardize practices, create a common language, tie together different company functions, create common experiences, act as implicit job descriptions, and create a positive overall project management culture.

The first procedure is project approval for authorizing the expenditure of funds and use of resources. The sales department must first provide a set of product/market information, including financial data, project scope, critical dates, and engineering resource requirements before management will approve the project. Thus, projects are now scrutinized much more closely before work is started and money spent—when more questions are asked and more people are involved, better decisions tend to be made.

The second procedure is the statement-of-work, identifying agreements, and assumptions for the project. Here, both the customer and top management must sign off before product design work begins, thereby reducing misunderstandings regarding not only product specifications, prices, and milestones but also intangible product requirements, explicit exclusions, and generic performance targets. Maintaining