

this documentation over the life of the project has helped avoid problems caused by late product changes from the customer, particularly for 3- to 5-year projects where the personnel rotate off the project. Customers have, however, been slow to agree to this level of documentation because it limits their ability to change timing, prices, and specifications late in the program when they are more knowledgeable about their needs.

The third procedure is the work breakdown structure, consisting of nine critical life-cycle phases running from definition through production. Included in each of these nine phases are four key elements: the tasks, the timing of each task, the responsible individuals, and the meeting dates for simultaneous engineering (a formalized procedure at Johnson Controls).

The fourth procedure is a set of management reviews, crucial to successful project completion. Both the content and timing of these reviews are specified in advance and progression to the next phase of a project cannot occur until senior management has approved the prespecified requirements, objectives, and quality criteria for that phase. The

procedure also specifies questions that must be answered and work that must be reviewed by senior management.

Through the use of these procedures, which are updated and improved with each new project experience, the learning that occurs in the organization is captured and made useful for future projects.

#### Questions

1. Summarize the unique way Johnson achieved control over their projects.
2. How did "scope creep" enter the projects in the past? Which procedure is now directed at controlling this effect?
3. Which of the four procedures is probably most critical to successful projects?
4. What is the term used in the chapter for the senior management review described in the fourth procedure?

Source: W. D. Reith and D. B. Kandt, "Project Management at a Major Automotive Seating Supplier," *Project Management Journal*, Vol. 22.

you don't get yours in today, you do not get two tomorrow." All this is said, of course, with good humor. Team members understand that the PM is not serious, but his projects seem to progress with exceptional smoothness. Crises do occur from time to time, but everyone on the team works to prevent them by applying control in an effective and timely manner.

## Controlling Creative Activities

Some brief attention should be paid to the special case of controlling research and development projects, design projects, and similar processes that depend intimately on the creativity of individuals and teams. First, the more creativity involved, the greater the degree of uncertainty surrounding outcomes. Second, too much control tends to inhibit creativity. But neither of these dicta can be taken without reservation. Control is necessarily neither the enemy of creativity nor, popular myth to the contrary, does creative activity imply complete uncertainty. While the exact outcomes of creative activity may be more or less uncertain, the process of getting the outcome is usually not uncertain. If the potential payoff for the creative activity is high, the need for careful risk management is also high.

In order to control creative projects, the PM must adopt one or some combination of three general approaches to the problem: (1) process review, (2) personnel reassignment, and (3) control of input resources.

**Process Review** The process review focuses on the process of reaching outcomes rather than on the outcomes per se. Because the outcomes are partially dependent on the process used to achieve them, uncertain though they may be, the *process* is subjected to control. For example, in research projects, the researcher cannot be held responsible for the outcome of the research, but can most certainly be held responsible for adherence to the research proposal, the budget, and the schedule. The process is controllable even if the precise results are not.