Developmental Overload

HOW DOES IT HAPPEN? HOW CAN YOU MANAGE IT?

BY BRADFORD L. GOLDENSE AND JOHN R. POWER

HOW MANY OF US HAVE BEEN IN THE SITUATION where there are just too many projects under way for the people available? How does it happen? Why do senior managers continue to add development projects so that they have a "rich" portfolio, until often the best product development people, engineers in particular, are assigned to four, five, or more projects concurrently?

As the number of projects increases, the coordinating, meeting, and relearning time goes up, and productive work time goes down. The assigned staff seems to spend most of its time running between projects. Overload exceeds real capacity in the first place, and then the process of juggling complexity reduces productive time spent on the projects, thereby *decreasing* real capacity.

Totaling all of the needs for all of the projects in a department, plus customer support and sustaining engineering, and comparing the result to the engineering headcount for a given time period will show how much the staff is overextended.

The ideal practice is to commit 85 percent of the hours available to planned projects so there is a constant and even flow of product development work and completion. This level of commitment allows for adjustments and capacity for rapid response to unexpected needs. For such a calculation, an estimate of the work to be done, in terms of staff effort, must exist. The more accurate the estimating system, the better the capacity management data.

Problems of overcommitment can arise from misestimates of time requirements, sometimes by as much as 700 percent. Such errors in estimating are not uncommon.

Certainly, R&D is different from manufacturing. There is intrinsically more intellectual and creative content and more variability of results. How might R&D officers manage capacity and predict future needs? The solution would appear to be in several parts.

Resources must be planned early. Rather than waiting until detailed development is initiated, at first sight of a potential development program a rough estimate will help frame the capacity impact that the proposed program may have on the organization.

Estimates must be made for each discipline or competency. Once serious development work is decided on, detailed estimates to the engineering specialty level are necessary. It's not just the number of engineers, but also the specific demands for specific skills that determine overall capacity.

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"Managing capacity to this level"—that is, across all product development disciplines—"is especially important if multiple development facilities are involved in the same project," Arnold said. "The range of disciplines should also include cross-functional resource needs, especially for key functions such as product management and purchasing."

Estimating time periods must become more precise by breaking them down into shorter blocks. The more precise you are, the better—down to the week, or to the day, if possible. This approach provides for more accurate estimating and tracking. Too often, the rough estimate becomes adjusted, but the level of detail remains a mystery.

Tools must evolve to deal with the details of managing the creative and intellectual resources of an engineering staff. Research by Goldense Group shows that the simple spreadsheet is the tool of choice today, but much more is needed to track every project, forecast allocation of every engineering specialty, and balance the staff across the highest-priority projects to maximize results. Tools are now becoming available that integrate project portfolio management, resource allocation and simulation, and time-keeping systems.

Actual results must be tracked as work progresses. Each discipline must record and track its time. This will permit rational adjustments of staff allocations as work proceeds, as projects encounter difficulties, and as tasks are completed. This knowledge should be quantified and brought back to check the estimating system.

Time recording system limitations should be lifted. Many companies mandate an artificial 40-hour-a-week cap on time entered when, in reality, some people work 45 to 90 hours some weeks.

We do all these things in the manufacturing function. But the same principles apply in R&D as well. There is a tremendous opportunity for R&D managers to refine their estimating processes and plan allocation of resources for improved results—the completion of new products on schedule. ■

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