

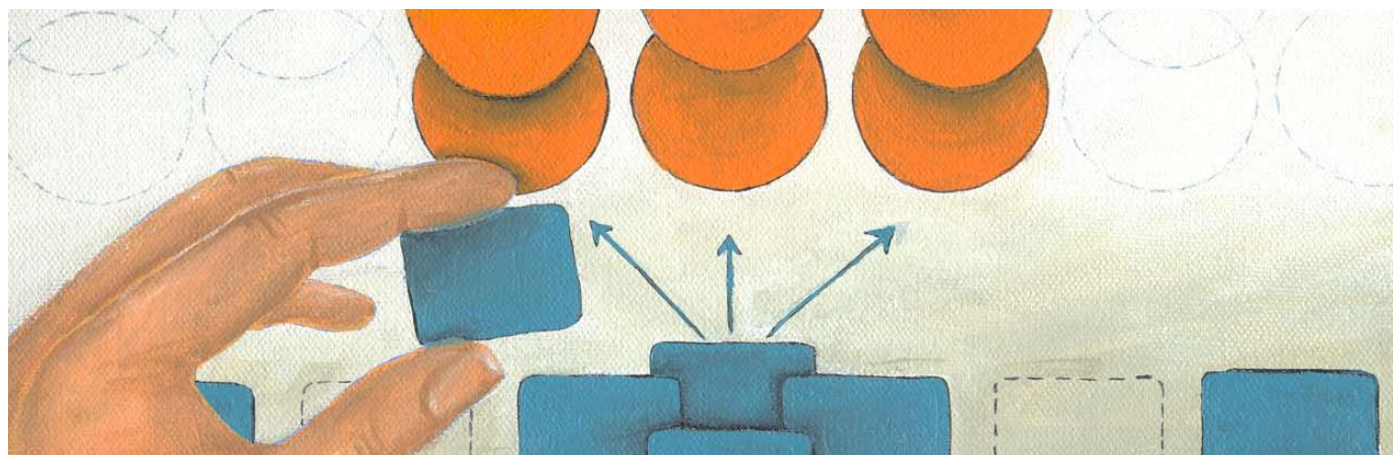
OPERATIONS

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Upgrading R&D in a downturn

Cutting research costs across the board in a recession isn't smart. Companies should use R&D as an opportunity to make themselves more competitive.

Christie W. Barrett, Christopher S. Musso, and Asutosh Padhi



As the global economic downturn spurs companies to slash costs, many senior executives are intensely scrutinizing research-and-development budgets. In fact, R&D is a perennially attractive target for corporate belt-tightening rituals, since it doesn't produce cash directly. Now more than ever, many companies are trying to generate quick savings—and to spread the pain of cutbacks in an equitable way—by asking their development groups to cut costs across the board.

Yet such tempting reductions starve and therefore delay promising projects while allowing unworthy “zombie” ones to linger. Worse, wholesale layoffs destroy morale among the remaining staff and can even prod your very best development engineers, who are always in demand, to accept the severance package that may be on offer and move elsewhere. Companies should take a more strategic approach to cutting R&D costs, by using today's difficult economic environment as an opportunity to upgrade the R&D organization's focus, practices, and management. That path helps companies not only to cut their costs but also to raise productivity and speed up time to market—while positioning themselves for even greater success in the future.

For most organizations, the first step is to examine the R&D portfolio rigorously to accelerate the most strategically promising projects while canceling irrelevant or moribund ones. It would seem obvious that companies ought to be doing this all the time, but many resist because of the challenges therein. Portfolios often grow organically, for example, with little central oversight, so it can be difficult for senior executives at a large company to get their arms around the totality, let alone the expected value, of its R&D activities. Another challenge: targeting specific projects for elimination means having difficult conversations with the people who lead them. It's far easier to ask for sweeping cuts—in a particular geography, a product area, or across the whole breadth of a global R&D group.

Many undermanaged and drifting underperformers survive these broad cuts, however. In large companies, such projects may even go unnoticed as changing market conditions undermine them. One leading industrial company, for instance, recently discovered, during a portfolio review, that the technology of a large project launched five years earlier had been eclipsed by the offerings of more nimble competitors.

Nasty surprises like this are common. Our experience in industries such as automotive, energy and basic materials, high tech, and medical devices suggests that all but the most vigilant product developers could terminate one-quarter to one-third of their projects, liberating resources for redeployment. How big is the opportunity? For a typical consumer-focused manufacturer with \$5 billion in revenues and \$250 million in annual R&D expenditures, the value at stake represents nearly 2 percent of sales. Such a strategic review frees up not only resources but also management attention, which a company can use to tear down silos, boost cross-functional collaboration, and manage R&D actively as a portfolio.

A chemical maker, for example, reduced the time to market of its top R&D project by more than 12 months and added more than \$100 million to the net present value of its R&D portfolio. How? It killed three zombie projects, redeployed resources to accelerate the development of its most promising new product, and improved early-stage R&D collaboration between engineers and marketers so that executives could make better decisions about which efforts to finance.

Companies can also make their development efforts more effective by infusing them with lean-management principles. While lean thinking is commonplace in manufacturing environments, most companies, fearing that any effort to tinker with R&D systems might delay new-product introductions or dampen creativity, have only reluctantly applied it to them. In our experience, the meandering development timelines, bureaucratic roadblocks, and high levels of waste in the development processes of many companies do far more to dampen the spirits of top engineers than senior managers suspect. By seizing on the sense of urgency that difficult times create and challenging long-held assumptions about R&D processes, organizations can pinpoint the huge potential for improvement while sparking their employees' creativity and energy.

An aerospace company, for example, used the conversations that a value-stream mapping exercise¹ sparked to identify unnecessary process checks, wasteful approval requirements, and hidden bottlenecks in the flow of its R&D activities. Together, these problems lengthened development times by nearly 30 percent. Engineers found the exercise energizing and useful because it gave them their first opportunity to compare notes with other departments. It also initiated frank, fact-based discussions between engineers and senior managers about the causes of the bottlenecks and administrative delays that engineers observed in their day-to-day work. These discussions led to process changes that helped to increase the productivity of engineers involved in early-stage design activities by 25 percent. Such results aren't unusual. Indeed, when large manufacturers focus lean teams on R&D, the teams often identify improvements that raise productivity by an amount equivalent to 8 to 10 percent of a company's R&D costs while speeding time to market by up to 15 percent.

Finally, companies should view the downturn as an opportunity to upgrade their skills. While some R&D units are instituting hiring freezes and mandatory reductions, forward-looking organizations are searching outside for specialist talent in hopes of stealing a march on competitors. Some companies we know are proactively weeding out underperformers. A McKinsey study of the IT and business process outsourcing sectors found that top-quartile engineers were more than twice as productive as those in the bottom quartile,² so a company that makes such moves can capture big savings quickly.

¹A lean-management technique used to examine the flow of information and materials needed to bring a product to market.

²In some cases, the differences are much larger. Among software makers, for instance, we've observed productivity gaps, between top and bottom performers, that exceed a factor of ten.

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Notably, a few companies we know have explored their cost-management opportunities by redeploying talented engineers freed up through portfolio reviews. One automaker rotated some engineers into small, short-term projects, where—supported by functional experts such as purchasers and marketers—they looked for innovative, cost-saving ways to change products. These teams generated ideas, expected to be worth \$2 billion a year, for modifying features, applying existing technology to new applications, and negotiating with suppliers for lower prices. What’s more, a few high-tech companies are capitalizing on the closer links between engineers and marketers to take a deep look at how much value consumers place on specific product features. One consumer electronics company, for example, used this information to modify a key product and reposition it into a higher-value consumer segment, ultimately increasing its gross margins by 30 percent. **Q**

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Christie Barrett is a consultant in McKinsey’s Detroit office, **Chris Musso** is an associate principal in the Cleveland office, and **Asutosh Padhi** is a principal in the Chicago office. Copyright © 2009 McKinsey & Company.

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