

Learning from the Best New Product Developers

The most successful companies take into account clarity, ownership, leadership, integration, and flexibility when implementing their new product development processes.

Jeffrey M. Davidson, Allen Clamen and Robin A. Karol

OVERVIEW: *A survey by the Quality Directors' Network of the Industrial Research Institute finds that most IRI member companies have a formalized new product development process in place, and that the R&D organizations in these companies have been active adopters and promoters of such processes. However, successful use of these processes has not*

Jeffrey Davidson is information management business director, Process Systems, at The BOC Group in Murray Hill, New Jersey. From 1992 through 1998, he was section director, innovation management, in which position he was responsible for design and implementation of BOC's stage-gate process. During his 14 years with BOC, he has held various technical and managerial positions related to materials technology, innovation management and information systems, both in the United States and in Japan. He received a B.Sc. and M.Sc. in materials science, and a Dr. Eng. Sc. in metallurgy, all from Columbia University. jeff.davidson@us.gtc.boc.com

Allen Clamen is technology processes manager at Exxon Chemical's Baytown Polymers Center in Baytown, Texas. He is responsible for the company's stage-gate process to manage the translation of ideas from conception to commercial implementation. In addition, he recently led a team to design a portfolio management process to allow a business to evaluate multiple opportunities on a consistent, objective basis. Starting with Exxon Research & Engineering Company in 1966, after graduating with a Ph.D. in chemical engineering from McGill University, Clamen occupied several positions within ER&E before transferring to Exxon Chemical in 1976 where he served as Baytown butyl plant manager and manager of advanced development. In 1986, he returned to ER&E as butyl polymers technology manager and polymers site manager before relocating back to Baytown, Texas to assume his current position. allen.clamen@chemical.exxon.sprint.com

Robin Karol is manager, renewal processes, within the Consulting for Business Improvements (CBI) group at E.I. du Pont de Nemours in Wilmington, Delaware. This group has responsibility to create, evaluate and implement business process changes in the renewal and growth process of the strategic business units in DuPont as well as within corporate functions, such as Central Research & Development. She has been involved in the majority of the installations of the stage-gate new product introduction process (PACE) in the corporation. She has been with DuPont for 17 years, holding various positions, including research supervisor, systems team leader, and quality manager of R&D. Prior to working at DuPont, Karol was a professor at Baylor College of Medicine. She holds a Ph.D. in biochemistry from the State University of New York at Buffalo, and was postdoctoral fellow at Albert Einstein College of Medicine in New York. Robin.A.Karol@usa.dupont.com

been nearly as widespread. As the experience base around these processes develops, we are finding that the most successful companies abide by few common guiding principles in implementing new product development processes, although with different approaches tailored to their organization. These best companies have also introduced new R&D management systems and approaches to effectively integrate R&D into the company's product development activities.

The past decade has seen a rapid and broad adoption of structured new product development (NPD) processes within companies whose growth, or even survival, rests on their ability to innovate fast and effectively. Many of these companies use some form of a Stage-Gate process derived from the model developed by Robert Cooper of McMaster University for managing NPD projects (1,2). Similarly structured processes are also described by Wheelwright and Clark (3), McGrath *et al* (4) and Smith and Reinertsen (5).

The primary focus of most of the literature on these structured NPD processes has been on descriptions of the process itself as well as supporting tools and practices. Descriptions are provided, for example, for the overall layout of the stages and gates for a project, the scope of the individual stages, and organizational structures for project teams and gatekeeper (or management decision-making) teams. The supporting tools and practices that are described include assessment of technical feasibility, market analysis, financial evaluation, gate-meeting protocols, gate-decision criteria, and decision-making techniques.

Based upon the frameworks described, many companies have developed NPD processes tailored to their own business strategy and culture. As experience around these processes accumulates, several prominent features of the most successful NPD processes are emerging. One excellent summary of best practices, derived from a survey of 383 U.S.-based companies, has recently been published by the Product Development & Management Association (6). Still, the majority of these studies tend to address the elements of process architecture or organizational structure—the *what* rather than the *how*.

Recognizing the increasing interest in NPD and the critical role of R&D in this process, a small study team

within the Industrial Research Institute's Quality Directors Network (QDN) was formed to explore this area further. In reviewing the current literature on NPD, we, as R&D/technology managers well-versed in the details of NPD and Stage-Gate processes, recognized two shortcomings. First, little has been published on the successful *execution* of NPD processes—how to *use* and *sustain* the process to achieve the intended results. Why is it, for example, that one company can embrace an NPD process with remarkable impact on business success, while an almost identical process might never take root—and consequently yield little or no benefit—in another company? The few excellent papers that have captured lessons on successful use of NPD processes have generally done so through small benchmarking forums of successful practitioners, or through consultants' observations or in-depth reviews of such companies (see, for example, 7,8).

The second shortcoming in our view is the lack of description of NPD processes from an *R&D perspective*. While it is recognized that NPD can be successful only if it integrates all parts of a business that contribute to product success, the special implications for R&D organizations force us to redefine R&D management approaches and organizational roles and responsibilities in order to achieve fast and efficient NPD.

Identifying the Best Practices

In the Fall of 1995, a small study team (9) set out to identify best practices, from an R&D point-of-view, for achieving both effectiveness and efficiency of innovation processes. We defined the term *innovation* to mean *the successful (as defined by the business) development and commercialization of new products, processes or services*. Starting with a proposed list of best practices for innovation gleaned from a literature review, the team created a survey, based upon the work of McGrath et al (4), to assess the "maturity" of QDN member companies with respect to use of these best practices. The survey used a graded scale with descriptions of each "level of maturity"—the degree to which best practices have been adopted—for several elements related to NPD.

The specific topics addressed were:

- Product strategy
- Idea generation
- Product planning
- Technology planning
- Product development process
- Project management
- Total quality management

- Documentation
- Sustainability
- Conformance
- Project management tools
- Team structure
- Career paths
- Review process
- Resource allocation
- Process metrics
- Continuous improvement
- External benchmarking
- Facilitation
- Decision-making quality
- Training

This survey of the QDN membership revealed that most of the member companies had both defined a structured NPD process and embraced the spirit of this process, but the extent of successful implementation within these companies, and within the R&D organizations in particular, was less far-reaching. Focusing then on the specifics of NPD process implementation, presentations from select QDN member companies (10) and a panel discussion on key factors for successful NPD process implementation in R&D organizations took place in the Spring of 1996. Subsequently, follow-up interviews were held with these presenters and representatives from several other QDN member companies.

Five Guiding Principles

While many details of NPD process implementation appeared to be company-specific, we noticed several common themes, or guiding principles, threaded throughout. In case after case, companies that considered their NPD process to be successful all adhered to five simple principles: clarity, ownership, leadership, integration, and flexibility.

Differences between these successful companies were mostly in the specific implementation approaches used within their own companies and R&D organizations, and the terminology used to describe their processes. In the following sections, we report on these guiding principles and propose that all of them must be adopted by any company wishing to be successful with new products. Under each principle, we also report specific examples of implementation approaches and some special issues or implications for R&D. Our hope and expectation is that the range of examples and issues will prove helpful to other R&D organizations embarking upon NPD process implementation.

1. Clarity—A Clear Path to Action

Ensure that the NPD process provides sufficient clarity and guidance to lead the organization to action. The

power of any process is its ability to channel the organization's activities and energies to achieve the desired results. As such, the process must go beyond descriptions of stages and gates, and specifically define *what* needs to be done, by *whom*, *when*, and *how*.

Particular value is achieved in the project team and the management decision team having a clear and shared view of what will be delivered at gates, as well as the success criteria associated with these deliverables. Each individual and organization must see how it participates directly in the business success. Implementation approaches include:

■ *Awareness/training materials.*—Formats include detailed handbooks, user guides, broadly distributed brochures, videos and "pocket guides." These communication vehicles are particularly effective if the underlying tools and processes are well embedded in the organization. For example, a *Launch Plan* or *Risk Assessment* may be descriptive enough in some companies to define specifically what must be brought to a gate, whereas in other companies more explanation for these activities would be required.

■ *Training.*—Almost all companies report that some type of training is required, and especially so if the company lacks common tools and processes as noted above.

■ *Facilitation—process stewardship.*—Beyond training, project teams—especially those inexperienced in the use of the process—typically require ongoing facilitation to help guide them through the specific steps of the process. Teams more familiar with the process may require only minimal facilitation. Companies with well-developed NPD processes generally devote considerable resources to facilitation, even to the point of having defined job descriptions for facilitators, and providing forums for these facilitators to develop and share best practices. Strong facilitation can minimize the need for formal training courses and help to develop strong project leaders.

■ *Information management (IM) systems.*—New IM capabilities have enabled several organizations to use Intranets or "GroupWare" as a vehicle for publishing process guides, posting milestones/deliverables of a project, tracking project progress, maintaining an archive database for all projects, or holding "virtual meetings." Including a person responsible for the NPD process on an IM development team is a particularly effective way of ensuring that the IM systems enable the desired business processes.

■ *Clear actions behind decisions.*—All gate decisions must be specifically and visibly actionable. For example, a GO decision at a gate might mean that resourcing is revalidated if the project stays within the current budget level, or might trigger a resource level adjustment if not; e.g., a new-hire requisition or a personnel transfer.

The process must specifically define what needs to be done, by whom, when, and how.

■ *Contracts between the project team and the gatekeeper team.*—Treating an agreement to deliverables and pass criteria as a contract between a project team and a management gatekeeping team can reinforce the commitments made.

■ *Metrics to measure the intended impact of the process.*—Clearly understood metrics tend to focus people on the desired results of the process, rather than the elements of the process itself. Examples of metrics used include:

- Percent revenue from products less than X years old.
- Percent projects terminated before the development stage.
- Cycle time from start to a commercialization point, such as first significant sales.
- Percent earnings after Y years of commercialization vs. prediction at last gate.

■ *Attention to personal judgment.*—While it is essential to make expectations and criteria explicit, excessive detail can have a negative impact. An overly prescriptive process can be viewed as ignoring the skilled judgment of the management decision team. Therefore, the key here is to ensure that the gatekeepers are not making decisions solely through a formula. At the same time, the rationale for decisions should be clearly communicated and understood so they do not appear to be arbitrary.

Implications for R&D

Typically, R&D organizations resist guidelines that are detailed and precise. However, defining guidelines in terms of business success for which there is broad buy-in and visible, consistent commitment from senior management makes these guidelines far more meaningful and acceptable for R&D. Furthermore, this type of clarity often offers a common language linking R&D with the broader business organization.

2. Ownership—By All

Engage and integrate all people and resources in the company that contribute to the successful commercialization of products. If speed and efficiency are to be achieved, new product development must be viewed as an enterprise-wide process rather than being owned by one function such as Marketing or R&D. This view tends to align all parts of the organization with a shared objective, and instills mutual confidence that each function is working toward this objective. Implementation approaches include:

■ *Internally designed process.*—Buy-in and ownership are greatly enhanced by having the organization create process guidelines for itself. Typically, process design teams are cross-organizational and have high-level sponsorship. Also, these teams generally review the developed guidelines with a cross-section of the broader organization before issuing them; in this way, the organization feels involved early in the development of the guidelines.

■ *Cross-functional teams.*—For many companies, a recognition that strong functional/organizational boundaries can be barriers to speed and efficiency has led naturally to the proliferation of cross-functional/cross-organizational product development teams. The “hand-off” model of moving product development from one function to the next has given way to a team-based approach in which a single team, with support from the respective functions, carries product development from concept through commercialization. A range of organizational models define the strength of product team and functional organization boundaries, and the degree to which a team should remain intact throughout the life of the project (3). Experience indicates that team effectiveness is decreased with weak definition of team membership or with high team turnover.

■ *Changing roles and responsibilities.*—Some companies explicitly define the roles and responsibilities of project and gatekeeping team members, and in some cases even the composition of these teams in terms of the functions represented for each stage of the project.

■ *Quality tools and processes.*—The formation and use of cross-functional teams has been found to be easier for companies with strong roots in quality management than for companies without such experience. Particularly effective quality tools and training approaches that have been found to facilitate teams are teambuilding, team chartering, meeting management, and full-time process facilitators.

■ *Personnel transfers.*—Permanent or temporary transfers of personnel to a project team, especially a co-located team, can dramatically improve cross-functional teamwork.

■ *Trained project managers.*—Team leadership is increasingly recognized as a critical skill or competency, and one that cannot be assumed to reside within the most creative R&D or most energetic business member on the team. Some companies have gone so far as to create job descriptions for project leaders, identify effective project team leaders within the current organization who can move from one product development team to another, and ensure career paths for good project managers.

■ *Rewards and recognition for teams.*—Many companies have established reward programs to highlight the superior use of the NPD process, including timely “kills” of less attractive projects.

NPD must be viewed as an enterprise-wide process, rather than being owned by any one function.

Implications for R&D

Cross-functional teams, while widely supported and prominently featured in R&D literature and conferences, do pose special challenges for R&D related to decision-making, organization and funding. None of these elements can be addressed solely within the confines of R&D. For NPD projects, decision-making, staffing and funding are typically shared between R&D and other organizational functions. As such, NPD projects are different from projects focused on more basic R&D or technical capability-building, which are generally seen as solely the responsibility of R&D organizations.

How can R&D organizations adjust to managing projects in which they are but one partner together with projects which are technology-driven? To promote greater alignment and teamwork on NPD projects, many R&D groups are organizing R&D along lines of business rather than the more traditional, functional divisions by science and engineering disciplines. At the same time, to ensure advancement of basic science and technology development, several R&D organizations have implemented or tested an approach of “ring-fencing” core capability or basic technology development in terms of funding and staffing. In this approach, a group of capability/technology development projects, and possibly people as well, are kept in a separate grouping that is managed and funded through a mechanism different from that for NPD projects, and typically with decisions made primarily by R&D management alone.

3. Leadership—At the Top

New product development is led from the top of the business or company. Almost every guide to change management will stress the need—indeed, the requirement—for senior management support. As with any corporate initiative, senior management support for NPD processes must go beyond advocacy in words and signs of visible support, although these are necessary, to full engagement of senior management as sponsors and active participants in the process. Implementation approaches include:

■ *Cross-functional gatekeeping teams.*—As with product development teams, most companies define cross-functional gatekeeping teams to include management drawn from these same functions and organizations. The level of management identified for

gatekeeping tends to vary with the management styles of the organization; i.e., whether it is comfortable with hands-on management at the top-most levels of the organization, or whether decision-making typically takes place at lower management levels. Regardless of the approach, however, the most successful companies stress that responsibility and accountability for new products reside at the top.

■ **Gatekeeper training.**—Again, following the analogy to product development teams, gatekeeping teams require training, both in the elements of the NPD process and in their responsibilities. Particularly important is the definition of, and agreement to, a decision-making process. Many companies report that instituting high-level training and arriving at commonly accepted procedures at the senior management level are not easy. One recommended approach is to package this training as a senior-level workshop, which is particularly effective if a key individual on the senior management team is willing to lead or sponsor this workshop. These workshops allow the leadership to practice new behaviors without the presence of a product development team. Facilitation of the gate reviews further helps the leadership to maintain these new behaviors.

■ **Rewards and recognition.**—To reinforce the principle of innovation being led from the top, senior executives might be rewarded accordingly. For example, some companies have reported tying senior management compensation to factors that include the number of new products commercialized or the revenue/profit generated by new products.

■ **Commitment to gate meetings.**—To ensure that all relevant gatekeepers can and do attend gate meetings, these meetings can be scheduled in advance, in some cases as much as one year in advance, or at least specific blocks of time can be reserved for meetings to be subsequently scheduled. Alternatively, gate meetings can be integrated into existing meeting formats, for example, regularly-held meetings of a management committee. In such cases, however, the gate meeting must still remain distinct and not become diluted into another meeting or process.

■ **Visible support from management.**—Letters and presentations from senior management as well as their visible participation in the process provide effective reminders that the process is vital to the entire organization.

■ **Flexible gatekeeper level.**—To avoid overloading a small number of gatekeepers with a large number of projects, gatekeepers can be defined based upon the size, spending level or scope of a project. For example, one company assigned middle management to single-product projects, and senior management to higher-level programs or platform development. The levels of these

Senior management support must go beyond advocacy to full engagement as sponsors and active participants in the process.

gatekeepers can also change over time as the project matures and requires greater funding or organizational commitment.

■ **Gatekeepers are resource providers.**—Gatekeeping is most effective when gatekeepers have the ability to release funds or other resources for the next stage. The existence of alternate funding routes that conflict with, or provide a path around, gate funding decisions diminish the role of gatekeepers and the impact of the process.

■ **Proactive decisions.**—Perhaps the most important element of senior management leadership is the ability to make decisions that are *implemented*, especially in regard to project resourcing. It is insufficient, and ultimately counter-productive, to make gate decisions that are not upheld after a gate meeting by any of the functions represented on the gatekeeping team. On the other hand, when organizations understand that resourcing requests will be seriously addressed through—and only through—gates, the NPD process can quickly become “the way we do things.”

■ **Stewardship.**—Rather than being seen as a process that resides within a single function—Marketing or Technology, for example—the senior management of a business should provide the resources to ensure that the NPD process maintains focus and is continually renewed to support the higher-level strategies of the company.

Implications for R&D

The greatest challenge for R&D in this area tends to be the alignment of its management decision-making processes with those of the business. For example, R&D senior management, together with business management, must agree on how research strategy aligns with business strategy, or how R&D staff will be assigned to projects. Similarly, how will decisions be made on the overall R&D portfolio and funding, and who will make these decisions? The inevitable conflicts between shared and local management must be resolved if R&D is to be a full partner in NPD.

4. Integration—with All Business Processes

Key processes outside of, or in parallel with, the NPD process that provide critical support for ongoing innovation must be recognized and integrated. As companies have begun to address and improve the core NPD process, attention is increasingly being focused on

processes both "upstream" and "downstream" of the NPD process in an attempt to clarify and improve these as well. In these cases, explicit links with the core NPD process help identify the expected inputs into, and outputs from, the NPD process. Implementation approaches include:

■ *Linked process maps.*—Some companies have explicitly tied and synchronized the stages and gates of their NPD process to other well-defined processes used in the business, such as market assessment, portfolio management, capital project management, product branding, ISO compliance, or safety and hazards review. Manuals, training and other communications can reinforce these linkages.

■ *Centralized business process organizations.*—Creation of a temporary team or a formal organization to oversee all business process design, implementation and monitoring can ensure that the NPD process is seen and managed as part of an overall business management process.

Implications for R&D

The approaches described in our survey and panel discussions focused primarily on integration of NPD with what is often referred to as the *Fuzzy Front End*, which R&D directors and managers typically regard as a key responsibility of their organizations. Recognizing that the innovation "funnel" can be effective only if a steady stream of new ideas fills it, much has to happen within a company to turn poorly-defined ideas and opportunities into business concepts that can be evaluated and acted upon.

Exactly what happens at this front end, and how it is or should be managed, are the subjects of much current R&D literature and conferences (e.g., 11,12). The approaches taken by different R&D organizations vary, but virtually all recognize that careful distinctions must be made between the development of new products and the front-end processes of idea generation or technology development that feed into those products. A good starting point is to acknowledge that this front end exists and is a vital input to NPD, and to use management approaches different from those used for NPD. In many R&D organizations, projects are explicitly categorized as *Exploratory* or *Technology Development*, and are therefore recognized as different from NPD projects.

5. Flexibility

Continually adjust the process to the organization's needs and desires. This guiding principle is really one that applies to all others discussed in this article. Perhaps the single most important lesson to emerge from our review of experiences in implementing an NPD process, especially within R&D organizations, is that *the process must fit the organization*. Successful implementation constantly seeks a balance between establishing

Key processes outside of the NPD process that provide critical support for ongoing innovation must be recognized and integrated.

elements that are standardized and common to all users of the process with the flexibility for adjustments for each product or project team. Those responsible for establishing an NPD process must aggressively challenge the organization to be world-class, and at the same time continually gain acceptance and support within the organization. Implementation approaches include:

■ *Metrics.*—The maintenance of performance metrics as described earlier, together with process metrics (e.g., the number of projects moving ahead, the number of projects terminated, and the time spent in each stage) provides data which can be continually monitored to see the effectiveness of the NPD process. These data might also suggest ways to adjust and improve the process, and provide feedback if these actions are effective.

■ *Process owner teams.*—In several companies, a network of process managers meet regularly to review both the use of the NPD process and the degree of success achieved through it. Metrics discussed above are often reviewed by such teams. Also, sharing lessons learned—what's working and what isn't—on an ongoing basis has enabled teams to then design improvements into the process to make it more useful and usable for the company or particular division. One large company with many individual business units and NPD processes tailored to each unit established a central group as the owner of NPD Best Practices responsible for guiding the process-owner team and implementing their recommended improvements.

■ *Shared learnings from project teams.*—Regularly scheduled meetings or special company conferences of project teams or project leaders are also particularly effective mechanisms for monitoring and improving the NPD process. Such gatherings also contribute to continuing buy-in.

■ *Leveraged experience.*—As companies build experience with a continually improving NPD process, they create an internal skill and organization that is able to customize the process and implement it in other businesses within the company.

Implications for R&D

While this guiding principle poses challenges for an R&D organization, they are no different than for any other part of the company. Flexibility requires a

willingness and organizational agility to integrate new approaches, while preserving the value of existing approaches. If R&D personnel are brought into this process of change and understand that it is, in a sense, an experiment to achieve better results, they can, and often do, become strong contributors to new product initiatives and advocates for the NPD process.

Summing Up

We began this study with a focus on the elements of process, believing that some processes were more likely to be successful than others. However, after sharing experiences on what really makes NPD processes successful or not, we quickly came to the conclusion that most companies had in place the same basic elements proposed in the literature, and success lay more in *how* the process was adapted to their own companies. We have come to view the NPD process in terms similar to the evolution of life forms. Virtually all companies have the same basic NPD “backbone”—the Stage-Gate process—but survival of this life form depends on how well it adapts to specific environments. Wholesale transplanting is typically not practical. As R&D managers responsible for supporting new product development, our jobs are to ensure that the process thrives by adhering to some basic guiding principles, and taking approaches that fit our company culture and organizational structure. ☺

References and Notes

1. Cooper, R. G. “Developing New Products on Time, In Time.” *Research • Technology Management*, Sept.-Oct. 1995, pp. 49–57.

2. Cooper, R. G. *Winning at New Products*. Addison-Wesley: Reading, MA (1993).
3. Wheelwright, Steven C. and Kim B. Clark. *Revolutionizing Product Development*. New York, NY: Free Press (1992).
4. McGrath, Michael E., Anthony, Michael T. and Amram R. Shapiro. *Product Development Success through Product and Cycle-Time Excellence*. Butterworth-Heinemann: Newton, MA (1992).
5. Smith, Preston G. and Donald G. Reinertsen. *Developing Products in Half the Time*. New York, NY: Van Nostrand Reinhold (1991).
6. Griffen, Abbie. *Drivers of NPD Success: The 1997 PDMA Report*. Product Development & Management Association, Chicago (October, 1997).
7. O’Connor, P. D. “Implementing a Stage-Gate Process: A Multi-Company Perspective.” *Journal of Product Innovation Management* 11(1994): pp. 183–200.
8. Deck, Mark J. “One Size Does Not Fit All—Customizing Product Development Best Practices for Different Development Environments.” IIR/PDMA Joint Conference: Beyond Stages & Gates. Atlanta, Georgia, May, 1997.
9. The study team consisted of V. Bange, A. Clamen, K. Danke, J. Davidson, K. Herald, R. Karol, L. Pruden, C. Roth, R. Wasson, J. Woods.
10. Presentations were made by Vincent Bange, Amoco Corporation, Allen Clamen, Exxon Chemical Company, Robin Karol, DuPont de Nemours and Company, Inc., Charles Roth, Dow-Corning, and Jon Woods, Eastman Chemical.
11. Khurana, Anil and Stephen R. Rosenthal. “Integrating the Process of Product Development Initiation: Transitions to a More Manageable Fuzzy Front End.” *Sloan Management Review*, Winter 1997, pp. 1103–120.
12. *Bringing the Fuzzy Front End into Focus*. IIR/PDMA Joint Conference, Scottsdale, Arizona, December, 1997.

Reprints

THE FINANCIAL MANAGEMENT OF R&D

Thirty-three RESEARCH • TECHNOLOGY MANAGEMENT articles on this subject are now available in paperback. To order, see inside back cover

Managing Financial Resources
How Much R&D?
Determining the Optimum Level for R&D Spending
How R&D Money Is Spent
When Choosing R&D Projects, Go With Long Shots
Evaluating Competing R&D Investments
Why Costs Increase When Projects Accelerate
How Good Is Our Research?
Pricing New Technology
Analyzing R&D Portfolios at Eastman Kodak
R&D Expenditures and Profit Growth

How R&D Affects Sales Growth, Productivity and Profitability
Corporate R&D Spending During a Recession
Sales Growth and R&D in the Chemical Industry
R&D Cut Before—Not After—Acquisition
Accounting for R&D Expenditures
Accounting for Research and Development
Reforming Management Accounting To Support Today’s Technology
How Capital Budgeting Deters Innovation—and What To Do About It
... AND MORE

The single most important lesson is that the process must fit the organization.