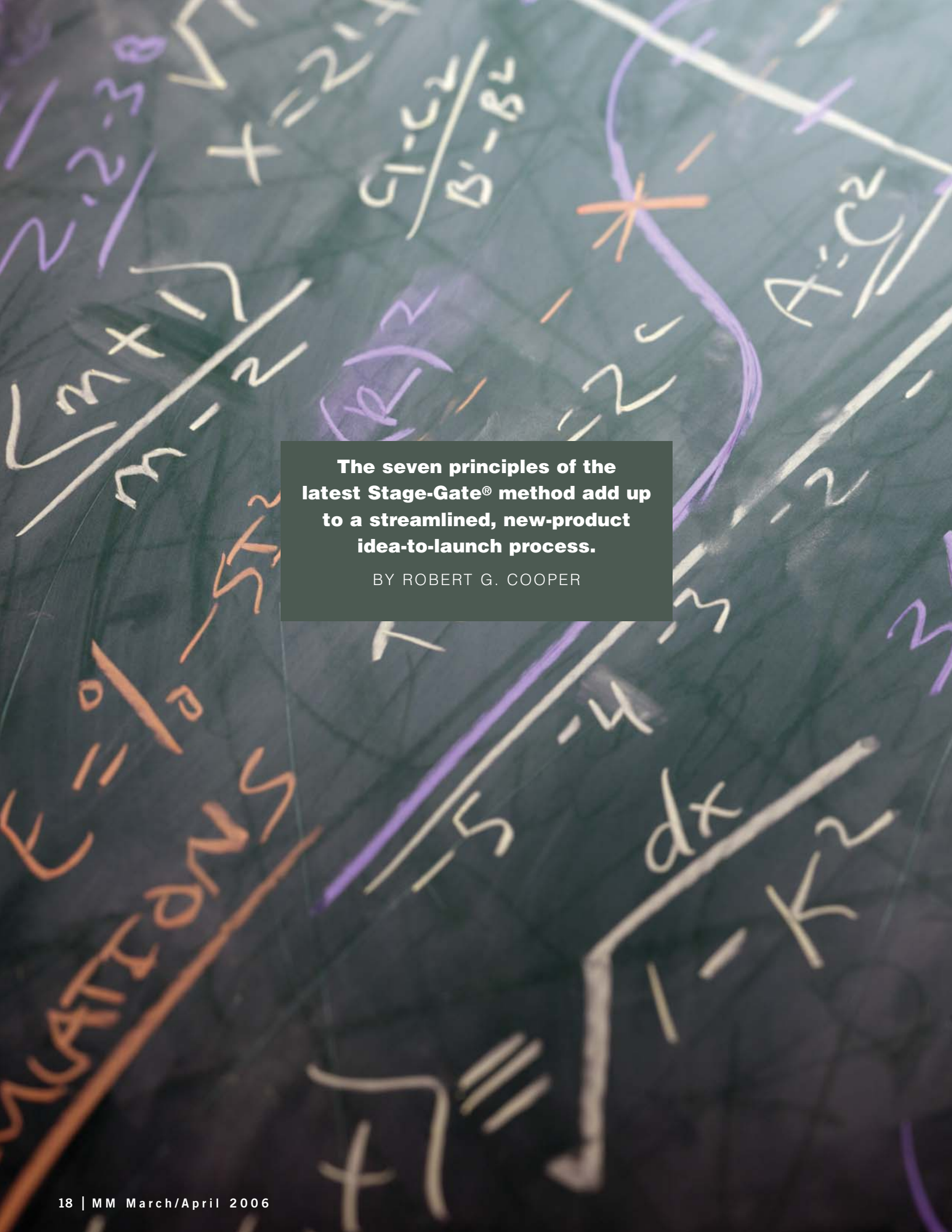


The seven principles of the latest Stage-Gate® method add up to a streamlined, new-product idea-to-launch process.

BY ROBERT G. COOPER

Formula for Success

Have you ever wondered why some companies make product innovation seem so easy—generating one big winner after another? Here is a startling fact: New-product development (NPD) productivity in the top performing company is five times what it is in the average company. The top performer gets five times as much new-product output for the same investment, according to the *Innovation Excellence Study 2005* conducted by Arthur D. Little (ADL). For the rest of us, developing a steady stream of successful new products is a real challenge.

Major Productivity Gaps

The concept of productivity is simple: the most bang for the buck. In product development, it is output (new-product sales or profits) divided by input (research and development or NPD costs and time).

The ADL study provides insights into NPD productivity by industry. It looks at output (five-year sales from new products as a percentage of company sales) and input (research and development spending as a percentage of company sales). One startling conclusion is the difference in productivity between top performers and the rest, regardless of industry. On average, there's an almost 1,200% difference between the most productive (top 25% of companies on this metric) and least productive (bottom 25% of companies on this metric). And in some industries, the difference is even greater. For example, the top 25% pharmaceutical companies are 31 times more productive in NPD than the bottom 25%. What are these high productivity companies doing so differently, and can your company learn from them?

EXECUTIVE briefing

Many businesses use the Stage-Gate® process—which this author introduced in 1988—to conceive, develop, and launch new products. As proficient companies have implemented, modified, adapted, and improved the methodology, it has morphed into a faster, leaner, and more effective tool. The next generation process, or NexGen Stage-Gate, builds in seven principles of lean, rapid, and profitable new-product development to maximize productivity in product innovation.

Maximizing Productivity

Seven key principles of lean, rapid, and profitable NPD are common denominators of high productivity businesses in product innovation. They are very much fact-based and were uncovered in benchmarking and best practice studies of top performing companies. These principles were developed from a long tradition of solid research, culminating in the most recent American Productivity & Quality Center (APQC) study of best practices in product innovation. Our research shows that companies or project teams that employ these principles achieve superior performance results, and that poor performers tend to ignore them (see Exhibit 1). Integrating the following principles of NPD into your new-product methodology results in a next generation idea-to-launch process, or NexGen Stage-Gate®. (Stage-Gate® is a registered trademark of the Product Development Institute Inc.)

Customer focused. Developing and delivering new products that are differentiated, solve major customer problems, and offer a compelling value proposition to the customer are the top drivers of NPD success and profitability. The product or service must possess a "wow" factor or a little excitement, something that is missing from most new products. But conceiving such a product seems beyond the reach of many companies. Indeed, a major reason for the decline in U.S. NPD productivity is that many company pipelines simply lack stimulating and genuine new products. Instead, they are focused on tweaks, modifications, and extensions with little real competitive advantage.

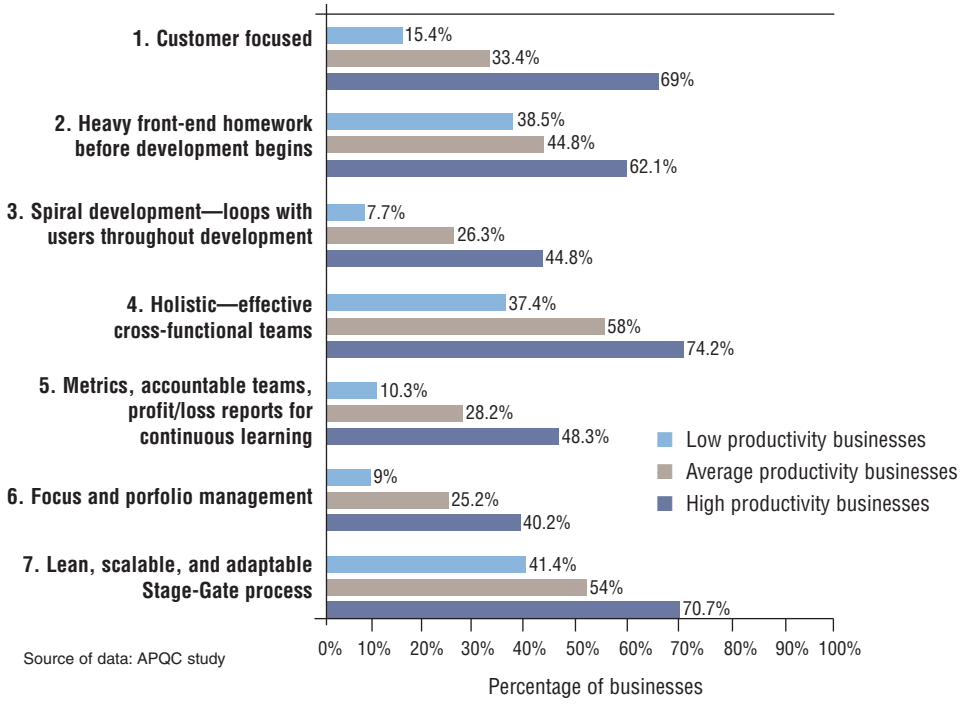
The quest for unique, superior products begins with a thorough understanding of the customer's unmet and often unarticulated needs—through in-the-field, voice-of-customer work. This means that the entire team—technical, marketing, and operations people—interviews and interfaces with real customers/users, and learns their problems, needs, and challenges firsthand. This is quite different from relying on the salesperson or product manager to speak for the marketplace; such information is often filtered, biased, and incorrect. The result is that the customer becomes an integral part of the entire process: scoping, product definition, development, validation, and beyond.

Front-end loading. Due diligence in the early days of a project pays off; just ask a venture capitalist. A good dose of the right up-front homework pays for itself tenfold, saving time and producing higher success rates. Smart managers demand such preparation on projects: fact-based market, technical, and business assessments. This homework is not excessive; rather, it yields just enough vital information for making the go-to-development decision, and for sufficiently defining the product and project to proceed. It's also instrumental in generating a winning product.

Spiral development. Things change. Often a team charges into development with a product definition based on information that was right at the time, or thought to be right. But it

Exhibit 1

High productivity businesses practice the seven NPD principles

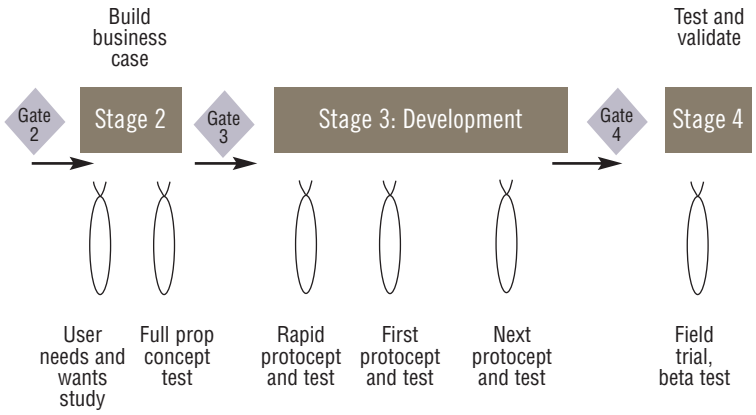


Source of data: APQC study

Exhibit 2

Spiral development

A series of "build, test, obtain feedback, revise" iterations or loops



wasn't, or the market shifted, or a competitive product was introduced. And when the product is developed, it isn't quite right for the market. Smart teams practice spiral development. They create the first version of a product (perhaps a virtual one) and test it with the customer, seeking feedback. Then they use that feedback to produce the next, more complete version—maybe a working model or protocept. These fast-paced teams remove unnecessary work and quickly move to finalized products, by forming a series of these iterative steps or loops: build, test, obtain feedback, and revise. The loops are built into the entire process, from scoping through development and into testing. When sketched on a flow diagram, they appear as spirals (see Exhibit 2).

A holistic approach. Product innovation is very much a business function (not a research and development activity) and a team-based endeavor. The core team, an effective cross-functional group, is the No. 1 key to reducing cycle time and promptly getting to market. Effective cross-functional teams comprise critical players from different parts of the organization, each with an equal stake in and commitment to the project. They remain involved from start to finish, not just for one phase of the project. Team accountability—results measured against success criteria—also is critical for a team to be effective. A carefully selected champion or captain leads the team, driving the project down the pipeline to the goal, in entrepreneurial fashion. The team's organization (composition, key players' roles and authority, and the choice of the appropriate team leader) means the difference between efficient, time-driven projects and those that languish and take forever.

Metrics, accountability, and continuous improvement. You can't manage what you don't measure. Many companies are guilty of not measuring their new-product results, as Exhibit 1 shows. It's not clear whether a project was successful (i.e., met its profit or launch-date target). And often, new-product profitability results for the entire company are missing. Without metrics, teams can't be held accountable for results—and continuous learning and improvement is next to impossible.

Top performing companies establish metrics: They measure how well individual projects perform by building post-launch and gate reviews into their idea-to-launch processes, and hold teams accountable for delivering promised results against these metrics. When gaps, difficulties, and weaknesses are identified, they hold problem solving sessions—focusing on the causes, and identifying corrective actions to stop recurrence. In this manner, continuous learning and improvement become an integral, routine facet of the development process: Every project is executed better than the one before.

Focus and effective portfolio management. Most companies have too many development projects under way, and often the wrong ones: They fail to focus, spreading their resources too thinly across too many initiatives, and their portfolio choices result in the wrong mix and balance of projects. Consequently, there are too many low-value projects and they take too long. Development projects are investments and therefore must be carefully scrutinized and focused through an effective portfolio-management system. This is achieved with a funneling approach: Start with many solid new-product concepts, and successively remove the weak ones via a series of gates. This results in fewer projects, but ones with higher value to the company—and a significant improvement in productivity.

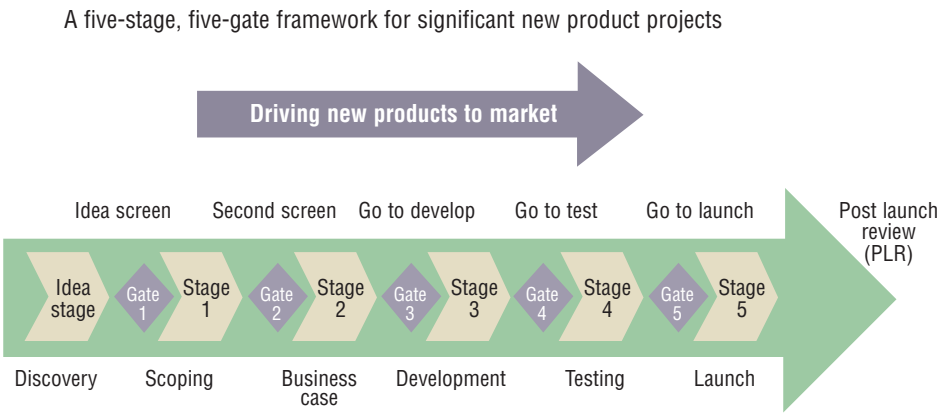
Adequate project resources also must be in place. Securing these is partly the result of an effective portfolio-management system, which ensures that the pipeline isn't overloaded. Planning is another facet of correctly pulling together resources: accurately estimating the resource requirements, projecting how long key tasks will take, and preparing an effective "go forward" plan. Finally, the needed resources—people and money—must be secured at the important gates. Gates are not just go or kill decision points, but also resource allocation and commitment points.

A lean, scalable, and adaptable process. Too many companies' idea-to-launch processes contain bureaucracy, time wasters, and make-work activities. Even worse, they contain rigid procedures and demand too much paperwork, forms, meetings, and committees—regardless of the project. If your new-product process or launch system is more than three years old, then it probably needs a good overhaul, or an update at minimum.

The ingredients of a first-class idea-to-launch system are clear: Build in the aforementioned six principles—those factors that mean the difference between winning and losing. Although these principles might seem obvious, the majority of companies aren't practicing them (as Exhibit 1 revealed). Only one-third of companies are truly customer focused in their new-product

Exhibit 3

An overview of NexGen Stage-Gate:



efforts, 55% don't perform adequate front-end homework, and almost three-fourths lack metrics, team accountability, and continuous learning in NPD. So go through the list in Exhibit 1, and ensure that each principle becomes ingrained in your process' language and method of operation.

NexGen Stage-Gate

Most U.S. companies engaged in product development have adopted and implemented some form of stage-and-gate new-product processes, such as Stage-Gate (see Exhibit 3). In the APQC study, every top performing company did so, to drive new products to market. This breaks the innovation process, from idea to launch, into a series of stages (typically about five). In each stage, the project team executes a prescribed set of actions, designed to advance the project effectively and efficiently. This set is based on best practices, and yields a defined package of deliverables at the end of each stage.

Each stage is preceded by a gate or go/kill decision point. Here, senior management meets with the team, and decides whether the project should proceed. Each gate has a prescribed list of deliverables—the information senior management needs to make the go/kill decision—and a set of go/kill and prioritization criteria, on which to base that decision. Gates are also where team leaders secure the necessary resources for driving the project forward; they get it on senior management's radar screen.

Stage-Gate makes sense, intuitively. It incorporates best practices that are often omitted in many companies' approaches; yields focus, eliminating poor projects early in the process; makes expectations clear to project teams; encourages a cross-functional approach to product development; and appropriately engages senior management in the innovation process as decision makers and resource providers. Moreover, when properly designed and implemented, Stage-Gate works. The majority of top performing companies in product innovation—Procter & Gamble, Microsoft, Siemens, and Hewlett-Packard—have proficiently implemented such processes, and witnessed their new products going to market quickly and effectively (see the APQC study). For example, Procter & Gamble boasted five of the top 10 best-selling consumer, nonfood new-product launches in 2004. Coincidentally, it is strongly committed to SIMPL, a Stage-Gate process like the one in Exhibit 3.

Companies can make Stage-Gate even more effective by moving toward NexGen processes—which incorporate the six principles outlined earlier in the article—and then adding the following elements of the seventh principle.

Lean. Smart companies streamline their NPD processes, removing waste and inefficiency at every opportunity. Senior management borrows the concepts from lean manufacturing and applies them to its new-product process to remove waste in the system. By analyzing a map of the idea-to-launch value stream, all non-value-added items are removed. Every activity, procedure, template, deliverable, and committee in the current process is scrutinized: Is it really needed and how can projects be completed faster and better? Continuous learning and improvement is a key facet of the lean method, with post-mortems undertaken at the post-launch review to provide insights. This results in a much more efficient and effective idea-to-launch method.

Scalable. There is no longer just one version of Stage-Gate. The process has morphed into multiple versions: Stage-Gate XPress for projects of moderate risk, such as improvements, modifications, and extensions; Stage-Gate Lite for small projects, such as simple customer requests; and Stage-Gate TD for technology development projects, where the deliverable is new knowledge, new science, or a technological capability. (See Exhibit 4.)

Adaptable. The notion of a rigid, lock-stepped process is dead. Today's fast-paced NexGen Stage-Gate is flexible, allowing the project team considerable latitude in deciding what actions are really needed and what deliverables are appropriate for each gate, and adapting to fluid and dynamic information. Spiral development is one way that fast-paced teams cope with changing data while getting their product definitions right.

In Stage-Gate, activities and stages can overlap, employing the principle of simultaneous execution: not waiting for the completion of a previous step and perfect information before moving ahead. (For example, don't wait for formal gate

approval before moving into some facets of the final stage, Launch.) Rather, long lead-time launch activities (e.g., sales force training, preparation of marketing collaterals, ordering raw materials) can be moved into the previous stage, Testing, to accelerate the project—even though it might be canceled. Here, the team weighs the cost of delay against the cost of moving forward in the event of cancellation, along with the likelihood of cancellation.

Partnering and alliances. Because so much of product innovation involves partners, alliances, and outsourced vendors, leading companies increasingly build alliance sub-processes into their traditional new-product processes. Embedded in each stage of Stage-Gate are key external activities, such as identifying the need for partners, seeking potential partners, and vetting candidate partners. Similarly, in addition to the usual gate deliverables (e.g., results of market and technical assessments, a financial analysis) are items such as "letters of intent" and "memoranda of understanding" from potential partners. Gate criteria also build in partnering issues.

Automated. Progressive companies recognize that automation greatly increases the effectiveness of their new-product processes. For one thing, everyone from project leaders to executives finds the process much easier to use, thereby enhancing buy in. (Cumbersome, hard-to-use Stage-Gate processes have been a hindrance to adoption in some companies.) Another benefit of automation is information management. Everyone involved has access to the best view of relevant information: what they need to advance the project, globally cooperate with other team members on vital tasks, help make the go/kill decision, or stay on top of a portfolio of projects. Examples of automation software include Accolade by Sopheon (www.sopheon.com) and Enterprise Project Management by Microsoft (www.microsoft.com).

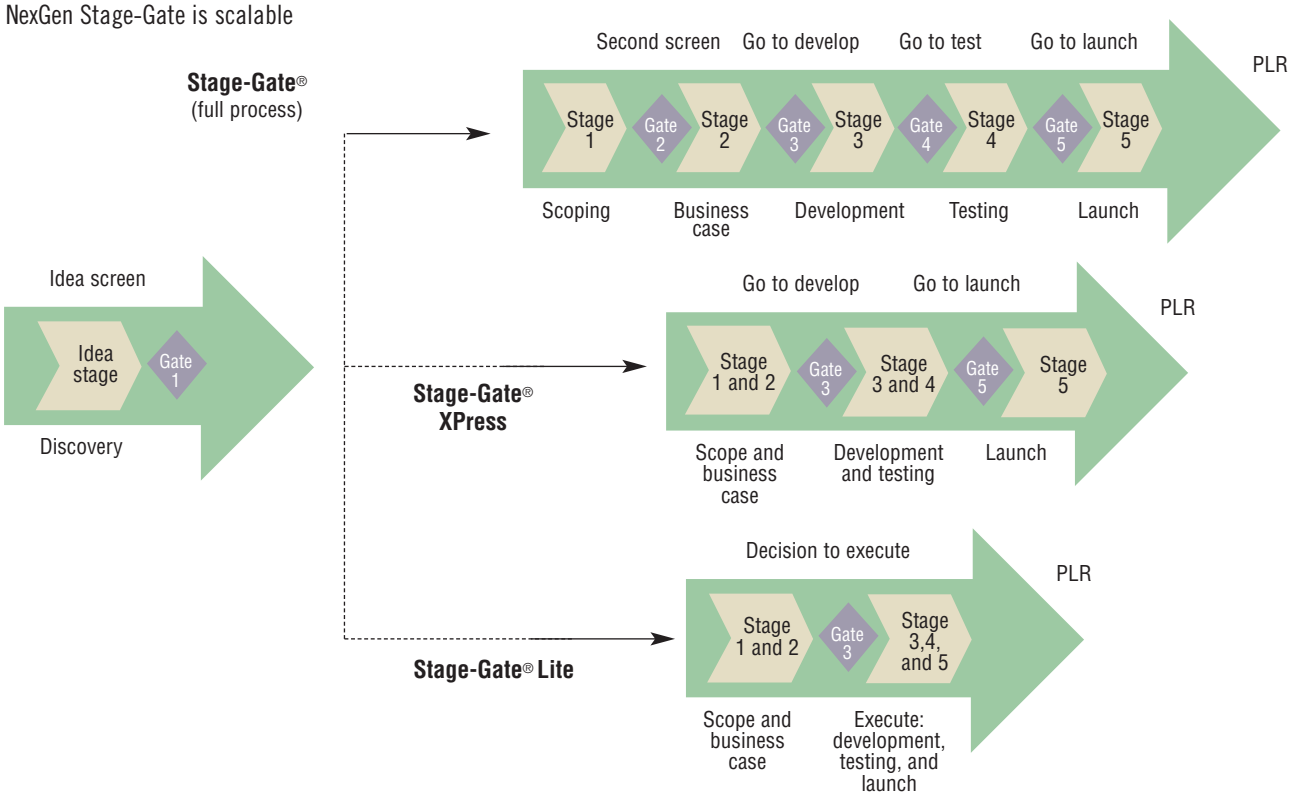
Part of company culture. Stage-Gate is more than a method, process, or set of flow charts, templates, and checklists. The best companies see their new-product processes as cultures that foster new and desired behaviors. Success in product innovation requires many behavioral changes, such as discipline; deliberate, fact-based, and transparent decision making; responsible, accountable, effective, and true cross-functional teams; continuous improvement and learning from mistakes; and risk taking and risk awareness. The structure and content of Stage-Gate is a vehicle for change: altering how people think, act, decide, and work together.

Winning Is Within Your Grasp

High productivity companies have adopted systematic idea-to-launch processes such as Stage-Gate, but that's not enough. The big winners are going further, incorporating the seven principles of lean, rapid, and profitable NPD, and transforming their 1990s stage-and-gate processes into something that is better suited for today's fast-paced and competitive world:

Exhibit 4

NexGen Stage-Gate is scalable



NexGen Stage-Gate. These companies model the way, proving that significant productivity increases in NPD are indeed possible.

Additional Reading

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Cooper, R.G. (2005), "Your NPD Portfolio May Be Harmful to Your Business's Health," *PDMA Visions*, XXIX, 2 (April), 22-26.

Cooper, R.G., S.J. Edgett, and E.J. Kleinschmidt, (2002). *New Product Development Best Practices Study: What Distinguishes the Top Performers, Houston: APQC* (American Productivity & Quality Center).

Cooper, R.G. and M. Mills (2005), "Succeeding at New Products the P&G Way: A Key Element Is Using the 'Innovation Diamond,'" *PDMA Visions*, XXIX, 4 (October), 9-13.

Author's Note: Since the 1970s, my colleagues Scott Edgett, Elko Kleinschmidt, and I have studied hundreds of development projects, teams, and companies, seeking to discover why some are so much more successful. These studies have been published in countless peer-reviewed scientific journals, and are a complete set of investigations into new-product success, failure, and productivity. Our research is summarized at www.stage-gate.com, as well as in the *PDMA Handbook for New Product Development* (John Wiley & Sons Inc., 2004); *Winning at New Products: Accelerating the Process from Idea to Launch* (Perseus Books, 2001); and the *International Encyclopedia for Business & Management* (International Thomson Business Press, 1999). ■

About the Author

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