

# TEN WAYS TO MAKE BETTER PORTFOLIO AND PROJECT SELECTION DECISIONS

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## BACKGROUND

Much like the stock market, picking the right portfolio of investments in new product development (NPD) is one key to getting more bang for your buck. Indeed, significant productivity gains in NPD are possible through more astute selection decisions, according to a major study of industry best practices. Moreover businesses that perform the best in new product development have in place a systematic portfolio management method – one that brings discipline and rigor to their project selection decisions and effectively guides their resource allocation. These firms recognize that every R&D or new product project is an investment, and like stock market investing, R&D investments must be managed in a professional and systematic way. This article outlines the top ten practices of these best performing businesses when it comes to portfolio management and project selection.

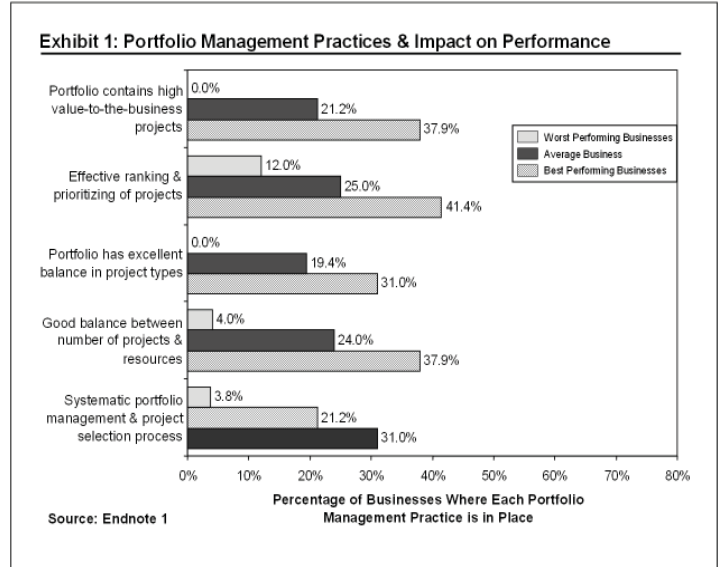
## CONTENTS

Introduction.....	2
Ten “Best Practices” in Portfolio Management.....	2
1. Focus on Data Integrity; Front-End Load the Project.....	2
2. Install a Systemic Idea-to-Launch Process and Make the Gates Work.....	4
3. Adopt an Incremental Commitment of “Options” Approach.....	4
4. Know When to Walk Away.....	5
5. One Size Does Not Fit All.....	5
6. There Is No One Best Way to Pick Projects – So Triangulate.....	5
7. Try Scorecards – One of the Top-Rated but Overlooked Methods.....	6
8. Use Success Criteria, Too.....	7
9. Use the Right Financial Approach.....	7
10. Build In Periodic Portfolio Reviews to Rank Your Projects.....	8
Practice Discipline.....	9
Planview Enterprise for Product Portfolio Management.....	9
References .....	9
About the Authors .....	10

## INTRODUCTION

One of the weakest facets of NPD is effective project selection and resource allocation.<sup>1</sup> As shown in Exhibit 1, only 21 percent of businesses’ portfolios contain high value-to-the-corporation projects; only one-in-four businesses effectively rank and prioritize their projects; and less than one business in five has the right balance of projects in their development portfolios. These are dismal results, but the story continues: The great majority of businesses (76 percent) have too many projects for the resources available, which means that projects are under-resourced; and only 21 percent have a systematic portfolio management or project selection system in place. If all this sounds too good to be true or impossible to accomplish, read for step-by-step guidance on how to build and deploy a proven integrated prioritization process.

By contrast, companies that are doing well at NPD – the best performers with the highest NPD productivities – have superior portfolio management practices (also shown in Exhibit 1). Although far from perfect, these best performers effectively rank and prioritize projects and they boast a systematic portfolio management system, much more so than do worst performers. (Here “best” and “worst” performers were identified on a number of productivity metrics including: NPD profitability versus funds spent; NPD profitability versus competitors; percentage of NPD projects meeting sales and profit targets; and on-time performance).



## TEN “BEST PRACTICES” IN PORTFOLIO MANAGEMENT

What are the secrets to those businesses that achieve superior portfolio and NPD results? Here is a list of ten best practices that leading companies were found to use to improve their project selection methods.<sup>2</sup>

### 1. FOCUS ON DATA INTEGRITY; FRONT-END LOAD THE PROJECT

The best project-selection system in the world is worthless unless the data are sound. As one executive cynically remarked about his firm’s adoption of an elaborate financial evaluation tool: “They’re trying to measure a soft banana with a micrometer”, noting that the precision of the tool far exceeded the quality of the data on projects.

The lack of good, early information plagues many companies’ new product projects. Exhibit 2 shows a sample: quality of market information, one of the weakest areas. Note that on entering the development stage, only one firm in five has good information on customer price sensitivity (what customers are prepared to pay for the new product); three-quarters of businesses lack data on customer reaction to the new product (for example, via a concept test); and almost two-thirds of firms do not have reliable data on market size and forecasted sales revenue from the new product.

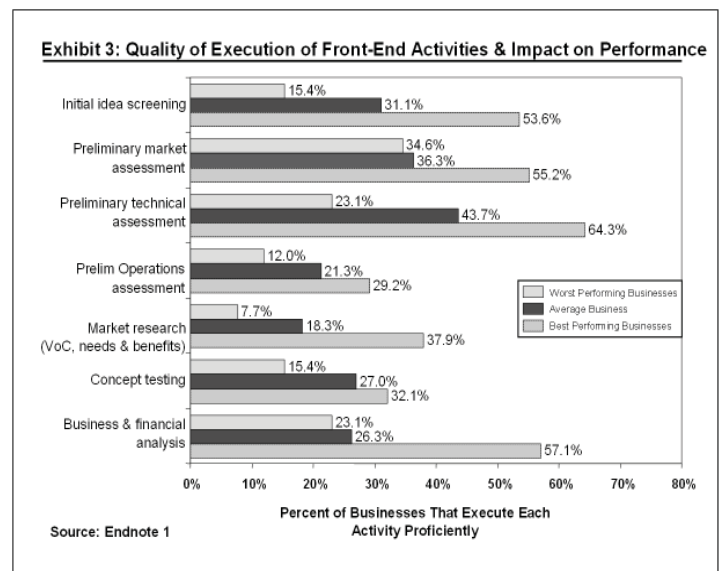
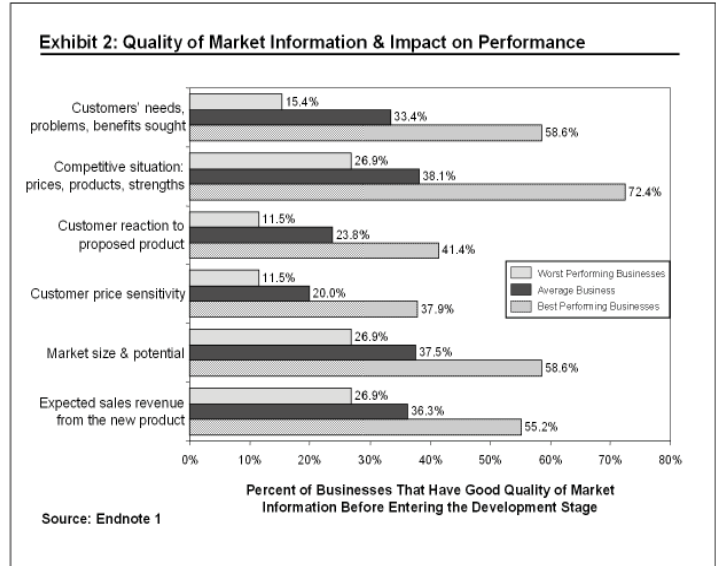
Fact-based decision-making in NPD pays off! As Exhibit 2 reveals, those businesses that spend proportionately more effort in the early phases of a project – for example, seeking and obtaining better market information – are rewarded with much higher performing NPD efforts. Best performing businesses are twice as likely to obtain solid information on market size and market potential prior to development than worst performers’; and they are three times as likely to get good price sensitivity information; and they are four times more likely to have good insights on customer reaction to the proposed product before development begins.

The first step to getting better data for more effective project-selection is to make sure information needs are defined for each of the Go/Kill decision points or gates. As one executive put it: “If the expectations are clear, there is a much better chance that project teams will deliver.” But too often project teams are uncertain about just what information is required – what they should deliver – to enable the executives to make Go/Kill decisions. If senior management needs to know “expected sales” or the “target price” to plus-or-minus ten percent, then make that requirement loud and clear to project teams! These information requirements should be spelled out in the form of gate deliverables for each of the gates in the business’s gating process.

Next, front-end load your projects – that is, move the centre of gravity of the work effort forward. This translates into placing much more management emphasis on doing the up-front or front-end homework before a project moves into the development phase. At Toyota, where a front-loaded process is one of their seven principles of effective NPD:

“Early engineering rigor, problem solving and designed-in countermeasures, along with true cross-functional participation, are key to maximizing the effectiveness of the product development process. By effectively segregating this inherently ‘noisy’ phase of the product development process from the execution phase, Toyota is able to minimize downstream process variation that is crucial to both speed and quality.”<sup>3</sup>

The evidence on front-end loading is very strong: Exhibit 3 shows some of the front-end activities typical of new product projects. Again, there is strong evidence of serious deficiencies: For example, only 18 percent of businesses execute the front-end market research well; and only one company in four develops a proficient business case for their development projects. What stands out in Exhibit 3, however, is how much better the top performers execute the front end of the project. Due diligence pays off!



## 2. INSTALL A SYSTEMATIC IDEA-TO-LAUNCH PROCESS AND MAKE THE GATES WORK

One way that many companies have attempted to build in these best practices is to install an idea-to-launch process or Stage-Gate® system.<sup>4</sup> This process helps to ensure that better information is available at gates:

- By defining what key tasks – for example, what market research, concept test or technical assessment – should be undertaken in each of the stages of the project, and
- By specifying deliverables – what information is really needed at each gate.

Exhibit 3 lists key best-practice activities in the front end of a project, tasks that are typically executed poorly, yet make the difference between winning and losing. Make sure that these are built into your idea-to-launch process.

A second pay-off of installing a stage-and-gate system is the existence of gates. Gates are much more than just a project review or milestone check point. Rather gates are the “bet points” or Go/Kill decision points in the process where resources are allocated to the positive projects, which then move forward. Equally important, gates are where weak projects are spotted and culled out before additional resources are wasted. To ensure more effective gates, we recommend the following practices, again based on observations in better companies:

- Make the gates visible in your idea-to-launch process. Typically there are about four or five gates in a major project.<sup>4</sup> P&G’s SIMPL™ process, for example, features four well-defined gates from “project establishment” to “launch authorization”, as illustrated in a recent *PDMA Visions* magazine article.<sup>5</sup>
- Ensure that the right gatekeepers are at the gate meeting. Gatekeepers are typically a cross-functional decision-team of senior managers that own the resources required for the project to move forward. Single department gatekeeping groups, or worse yet, single gatekeepers, don’t work – they miss many of the nuances and multi-functional inputs required in a complex project.
- The full project team should also be at the gate meeting, especially for larger and important projects, making their project presentation and dealing with questions from the gatekeepers. This should be a transparent decision-making process.
- Make the decision – Go or Kill – and commit the resources, right at the meeting. The project leader should leave the gate meeting with a decision, and if Go, a check cut!
- Use a gate facilitator – a referee or process manager – to ensure focus and that a decision is really made that day.
- Consider using rapid gates, electronic gates or even self-managed gates for lower risk, fast projects.

## 3. ADOPT AN INCREMENTAL COMMITMENT OR “OPTIONS” APPROACH

This is analogous to buying a series of options on a property. In order to manage risk, purchase an option to buy; the cost of the option is low, usually a small fraction of the full investment. Then investigate the property further, and buy a further option; and finally decide whether or not to make the full investment. The mistake that many managements make is to make an irrevocable “Go decision” on a NPD project very early in the project when relatively little is known, and then never seriously consider stopping or killing the project once past this initial Go decision. As one executive put it:

*“In our company, projects are like express trains. Once underway, they pick up speed. They may slow down at the stations, but never intend to stop until they reach the final destination, the marketplace.”*

The result in this business was a rapid process that yielded a lot of fast but weak launches!

Your idea-to-launch process must be an incremental commitment process. At the idea screen, don't bet the farm! Rather place small bet – commit enough resources to have a look at the project. With better information at successive gates, increase the size of the bets. The goal is to build in a series of Go/Kill decision points, with each successive gate involving more and more resource commitments, much like the poker game of Texas Hold'em. As resource commitments increase at successive gates, information is better and uncertainties are reduced, and hence risk is managed.

#### 4. KNOW WHEN TO WALK AWAY

The professional gambler knows “when to hold them, when to fold them, when to run and when to walk away”, as the Kenny Rogers’ song goes. Sadly, in too many firms, in spite of building in gates throughout the process, management simply lacks the will or mechanism to kill bad projects. As one senior executive remarked: “*We never kill projects ... we just wound them,*” an admission of his management team's inability to stop a bad project. The point is that Go/Kill meetings must yield some kills, and unless some projects are stopped, the gatekeepers are not doing their job. Also, like the poker player wisely folding his hand, management must recognize that a *correct kill is a success* – it just saved the company a bag of money and a heap of trouble.

#### 5. ONE SIZE DOES NOT FIT ALL

If your financial advisor uses the same criteria to evaluate and select different categories of investments – stocks, bonds, and real estate – then you should get another advisor. Quite clearly, these are different types of investments, and require the use of quite different investment criteria for each. The same is true of development projects. There are huge differences between small incremental projects, genuine new products, and platform developments. Yet too often we see a failure to recognize the differences and handle each differently.

The solution is to *categorize your developments projects into buckets*, such as:

- New products
- Platforms and technology developments
- Improvements, modifications and extensions
- Customer requests

These four types of projects are as different from each other as stocks are from bonds. So *use different criteria for different buckets*: for example, employ financial criteria (profitability or payback) for relatively predictable projects, such as improvements and modifications. But use more qualitative and strategic criteria in the form of a scorecard for platform developments or innovative new products.

#### 6. THERE IS NO ONE BEST WAY TO PICK PROJECTS – SO TRIANGULATE

In wartime when intelligence officers attempt to determine the accurate location of an enemy radio signal, they triangulate. They set up three listening posts, and hone in on the correct location, simply because one listening post cannot provide the total answer. Similarly, in NPD, when trying to make the correct Go/Kill decision, recognize that all methods are somewhat unreliable, so consider using multiple selection methods in combination and hone in on the correct decision. Use as many as three different selection methods to make the tougher decisions (for example in the case of new products or new platform developments). Best performing businesses rely on an average of 2.4 new product selection methods per firm, simply because one alone won't do the job.<sup>2</sup>

## 7. TRY SCORECARDS – ONE OF THE TOP-RATED BUT OVERLOOKED METHODS

Although scorecards are not the most popular Go/Kill decision tool, they produce surprisingly good results in terms of the resulting portfolio of projects. For example, scorecards yield higher value portfolios and more balanced portfolios.<sup>2</sup> Moreover, of all selection methods, they fit management's style the best, and are rated by users as the most efficient and effective of all methods, yielding the right decisions without being too burdensome. By contrast, financial tools, by far the most popular, yield inferior portfolios on a number of metrics, including portfolio value, balance and strategic fit.

The proponents of the scorecard approach argue that many qualitative factors are known drivers of success in NPD.<sup>6</sup> For example, new product projects that leverage the business's core competencies, sell into an attractive market, and boast sustainable competitive advantage have higher success rates and make more money. The theory is that if you can explain success, then you can predict success. Thus, construct a scorecard using these same factors that are known drivers of success, and use the scorecard at your gate meetings to rate and rank projects. That is, the gatekeepers (not the project team) score the project on six to ten key evaluative criteria (a sample scorecard is shown in Exhibit 4). The resulting scores are then combined to yield an overall project attractiveness score. This scoring exercise and final score become key inputs to the Go/Kill decision (although many users of this approach claim that it's the process – a senior decision-making group going through a set of key questions, debating their scores, and reaching closure on each – that provides the real value, and not so much the final score itself).

### **Exhibit 4: A Scorecard for Project Selection for the New Products Bucket**

#### **Factor 1: Strategic Fit & Importance**

- Alignment of project with our business's strategy
- Importance of project to the strategy
- Impact on the business

#### **Factor 2: Product & Competitive Advantage**

- Product delivers unique customer or user benefits
- Product offers customer/user excellent value for money (compelling value proposition)
- Differentiated product in eyes of customer/user
- Positive customer/user feedback on product concept (concept test results)

#### **Factor 3: Market Attractiveness**

- Market size
- Market growth & future potential
- Margins earned by players in this market
- Competitiveness – how tough & intense competition is (negative)

#### **Factor 4: Core Competencies Leverage**

- Project leverages our core competencies & strengths in:
  - technology
  - production/operations
  - marketing
  - distribution/salesforce

#### **Factor 5: Technical Feasibility**

- Size of technical gap (straightforward to do)
- Technical complexity (few barriers, solution envisioned)
- Familiarity of technology to our business
- Technical track record on these types of projects
- Technical results to date (proof of concept)

#### **Factor 6: Financial Reward versus Risk**

- Size of financial opportunity
- Financial return (NPV, ECV, IRR)
- Productivity Index (PI)
- Certainty of financial estimates
- Level of risk & ability to address risks

Projects are scored by the gatekeepers (senior management) at the gate meeting, using these six factors on a scorecard (0 - 10 scales). The scores are tallied & displayed electronically for discussion. The Project Attractiveness Score is the weighted or unweighted addition of the six factor scores (averaged across gatekeepers), and taken out of 100. A score of 60/100 is usually required for a Go decision.

## 8. USE SUCCESS CRITERIA, TOO

A second selection method, and one employed with considerable success at firms such as P&G, is the use of success criteria.<sup>7</sup>

*“The company [P&G] relies primarily on success criteria to help make better Go/Kill decisions on projects. Specific success criteria for each gate relevant to that stage are defined for each project, and are agreed to by the project team and management at each gate. These success criteria are then used to evaluate the project at successive gates, and are also key evaluation criteria at the post-launch review: did the project team achieve what was agreed to? In addition, a number of businesses have developed general screening tools and scorecard methods to assist the leadership team in selecting ideas that will enter the SIMPL™ process.”*

Success criteria typically include metrics on profitability, first year sales, launch date, and even expected interim metrics, such as test market results. The method allows the project team to custom-tailor criteria to suit the nature of their project. Further, it forces the team to make much more realistic and accurate sales, costs and time projections, which provides better data for management to make the Go/Kill decision. The method has the added benefit of instilling project team accountability: at the post-launch review, the project’s results are compared against the original projections made by the team.

## 9. USE THE RIGHT FINANCIAL APPROACHES

Most financial people concur that the NPV (net present value) is the correct method for capital budgeting and hence for making Go/Kill decisions. NPV recognizes that money has a time value; it places progressively less weight on future and distant revenue estimates; and because it is a cash flow method, it avoids many of the problems inherent in accounting or accrual methods. But there are some important caveats when using NPV.

First, some projects are simply too small or too short term to merit a full-fledged financial analysis involving NPV. So for these smaller projects, such as Sales Requests, use a simpler financial index (perhaps a Sales-to-Cost ratio) or a very simple scorecard.

For new product projects, which involve uncertainty and risk, consider using a probably-adjusted NPV. For example, the Expected Commercial Value method based on decision-tree analysis and Monte Carlo simulation approach both effectively deal with risk, uncertainty and probabilities.<sup>6</sup>

Use the Productivity Index, an extension of NPV, as well. At some point, projects must be prioritized against each other simply because resources are constrained. The Productivity Index is a financial approach based on the theory of constraints. The argument here is that, in order to maximize the value of your portfolio subject to a constraining resource, take the factor that you are trying to maximize – for example the NPV – and divide it by your constraining resource, for example the person-days (or costs) required to complete the project:

$$\text{Productivity Index} = \frac{\text{Forecasted NPV}}{\text{Person-Days to Complete Project}} \quad \text{or PI} = \frac{\text{Forecasted NPV}}{\text{Cost to Complete Project}}$$

Then rank your projects according to this index, as in Exhibit 5, until you run out of resources. Those projects at the top of the list are Go projects, are resourced, and are accelerated to market. Those projects beyond the resource limit in Exhibit 5 are placed on hold. The method is designed to maximize the productivity of your portfolio yet stay within a resource limit.

## 10. BUILD IN PERIODIC PORTFOLIO REVIEWS TO FORCE RANK YOUR PROJECTS

Setting up a gating process is an excellent first step, but it's not enough. One problem is that projects are evaluated one at a time at gates, but are never compared against other projects. Nor are resource constraints considered when projects are viewed in isolation at gates. So it becomes too easy to say "yes" to every project at a gate, the result being too many projects for the limited resources available or pipeline gridlock.

To correct this yea-saying tendency, use portfolio reviews in conjunction with gates. Here the focus of a portfolio review is on the entire portfolio of projects – ensuring that your business has the correct set of Go projects, the right mix and balance of projects, the right priorities of projects, and sufficient resources to undertake these Go projects. Portfolio reviews are typically held about four times per year.

At a typical portfolio review, all projects initially are in the auction. Many companies start by categorizing their projects into the project-type buckets outlined in item 5 above. Next the "must do" projects are highlighted in each bucket – projects that are strategically essential, are almost completed and are still good ones, or meet a key customer commitment. These "must do" projects are removed from the auction, are designated as top priority, and their resources are protected.

Next, the remaining projects are prioritized within each bucket as in Exhibit 5. Be sure prioritize within buckets, not across buckets, so that you never compare apples and oranges; use different criteria for different project types or buckets; and use multiple criteria as noted in item 6 above. For example, in the "new product" bucket, rank your new product projects by using a combination of the scorecard score (from the most recent gate meeting) and the Productivity Index in order to prioritize the projects. Projects are ranked until out of resources in each bucket. (As part of the development of an innovation strategy, management should have already made a strategic decision regarding how many resources go to each type of project or bucket using a Strategic Buckets approach).<sup>8</sup>

Finally check for balance. That is, estimate the proportion of resources going to projects across relevant dimensions, such as the split by market, by project type, by business area or by risk level. Pie charts and bubble diagrams are a convenient way to display these resource splits.<sup>6</sup>

**Exhibit 5: New Product Projects Are Rank-Ordered Using the Productivity Index & Gate Score Until the Resource Limit Is Reached**

Project Name	Gate Score (0-100)	Stage	Productivity Index	Resources Required	Cumulative Loadings (Person-Days)	Rank
			NPV Person-Days	(Loadings: Person-Days)		
Murray	83	3	206	120	120	1
Timor	83	4	194	140	260	2
Bering	75	3	180	90	350	3
Elk	78	2	142	180	530	4
Berlin	70	4	148	100	630	5
Columbia	80	Hold at Gate 3	150	120	-	Hold
Snap	70	Hold at Gate 2	160	80	-	Hold
Moose	75	Hold at Gate 2	108	130	-	Hold
Banda	73	Hold at Gate 3	129	110	-	Hold

"Loadings" is the person-days required to undertake the project (next quarter). The limit is 650 Person-Days in this example, denoted by the bold line.

## PRACTICE DISCIPLINE

Picking the right portfolio of projects is paramount to maximizing your NPD productivity. So move forward: Design your portfolio management system by following the guidelines above, experiment with it, get the gatekeepers to endorse and commit to using it; and then stick to it. While none of the portfolio or project selection tools is perfect, most yield fairly good results. And the worst situation is employing no system – a gut feel, political, shoot-from-the-hip approach. In short, any portfolio system is better than no system at all!

## PLANVIEW ENTERPRISE FOR PRODUCT PORTFOLIO MANAGEMENT



Planview Enterprise, the portfolio management solution from Planview, features capabilities that help product management and product development organizations automate the ideation process, optimize product and roadmap planning, accelerate time to market, and provide transparency into the true cost of product development.

Planview Enterprise is certified Stage-Gate® Ready, an endorsement by Stage-Gate, Inc., that this solution meets the requirements to help drive innovation while minimizing risk in product development efforts, and can be leveraged to successfully implement Stage-Gate best practice processes such as Idea Management, Idea-to-Launch, and Portfolio Management.

Learn more at [www.planview.com/npd](http://www.planview.com/npd).

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7. Explained in (and paragraph taken from) *PDMAVisions* article on P&G’s approach in endnote 5.
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## ABOUT THE AUTHORS


**Dr. Robert G. Cooper**

Dr. Robert G. Cooper is one of the most influential innovation thought leaders in the business world today. He pioneered the original research that led to many ground-breaking discoveries including the Stage-Gate® Idea-to-Launch process. Now implemented by almost 80% of North American companies, it is considered to be one of the most important discoveries in the field of innovation management. He has spent more than 30 years studying the practices and pitfalls of 3,000+ new product projects in thousands of companies and has assembled the world's most comprehensive research on the topic. His presentations and practical consulting advice have been widely applauded by corporate and business event audiences throughout the world making him one of the most sought-after speakers.

A prolific author, he has published more than 90 academic articles and seven books, including the best selling '*Winning at New Products, 3rd Edition*'. He is the recipient of numerous prestigious awards including the Crawford Fellow from the Product Development and Management Association (PDMA) and the Maurice Holland Award from the Industrial Research Institute (IRI). Dr. Cooper is a Professor of Marketing and Technology Management at the Michael

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**Dr. Scott J. Edgett**

Dr. Scott J. Edgett is internationally recognized as one of the world's top experts in product innovation and is the pioneer of portfolio management for product innovation. He is a high profile speaker and sought-after consultant. Dr. Edgett has had extensive experience working with large multinational clients in a variety of industries, principally focusing on issues affecting innovation leadership and capability. He is credited with helping business executives and innovation professionals successfully implement world-class innovation processes that have generated outstanding results. His speaking engagements and consulting work have taken him around the globe to work with some of the world's best innovators and companies among the Fortune 1000.

Dr. Edgett is Chief Executive Officer and co-founder, with Dr. Robert G. Cooper, of both Product Development Institute and Stage-Gate Inc. He has spent more than 20 years researching and developing innovation best practices and working with organizations in product innovation. He is a prolific author having written six books including the popular '*Portfolio Management for New Products, 2nd Edition*' and has published more than 60 academic articles. Dr. Edgett is a former Professor of the Michael G. DeGroot School of Business,

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