JANUARY 2005 VOL. XXIX NO. 1

pdma VISIONS

Insights into Innovation™

COVER STORY:

Affymetrix uses NPD to advance the genomic revolution

ALSO INSIDE:

- Process Knowledge
- Confusing Terminology
- Report on PDMA 2004

SPECIAL SECTION: "Metrics That Matter"

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TrailBlazer®

Product Concept Development Lab

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The Eureka! Ranch and AcuPOLL Research present the first integrated product concept development laboratory. **It was specifically designed for helping Product Development Teams translate their BIG IDEAS into market ready new product concepts.** AND, for helping you create FUTURE FOCUSED Big Ideas for New Product Concepts.

Research among corporate managers indicates that it takes 7.3 brainstorming sessions to invent 1 big idea.

Bottom Line: Research among corporate managers indicates it takes 7.3 brainstorming sessions to invent 1 big idea.

One Trailblazer Product Concept Development Lab delivers an average of 8.2 Big Ideas! Quite simply,the hard data indicates it would take nearly 60 classic brainstorming sessions to generate as many big ideas as the average Trailblazer Lab.

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"Customers can't say what new product would be desirable three years from today. New ideas are generated by imagination, risk, innovation, trial and error by the producer."
– Deming

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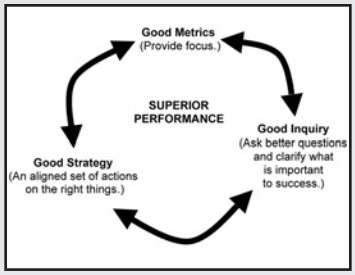

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Visions magazine keeps members on top of trends and developments in the NPD world and the latest thinking of product development leaders. It is published quarterly by the Product Development and Management Association (PDMA). Subscriptions included in PDMA membership package; or available at $85 per year in the U.S. or $125 abroad. Contact Bob Fogle for order form.

Visions welcomes articles on product development and management. Articles for the next issue of *Visions* (April 2005) are due Feb. 18, 2005. Please submit queries to the Editor, April W. Klimley, by e-mail or phone.

From the Editor of *Visions*

by April W. Klimley, Editor-in-Chief, Visions *(aklimley@pdma.org)*

There is no doubt about it. A better economy means more work in New Product Development (NPD). You could see this at PDMA 04—PDMA's 2004 International Conference. The blockbuster conference attracted more participants than ever from North America as well as distant realms, such as North Korea and Singapore. The keynotes were inspiring; the track sessions were packed with information; and the Exhibit Hall was popping. For a full description, read Phil Clark's article starting on page 24.

Clearly, the formal discipline of Product Development (PD) across the life cycle is attracting interest around the world as U.S. companies and large multinationals refine their PD processes and young companies institute new ones.

To keep *Visions* on top of this growth curve and respond to changes in PDMA's own member demographics, we plan to expand our global and industry sector coverage. You can find details in the box on page 5. Call or e-mail me if you'd like to participate. We have also made some immediate improvements: a new cover design in keeping with PDMA's new graphics guidelines, and a new column—"Back to Basics"—designed for newcomers in the field.

In this issue, we bring you an exciting cover article on Affymetrix, a leader in the genomic revolution, as well as a 2004 co-winner of PDMA's prestigious Outstanding Corporate Innovator (OCI) award. It is fascinating to see how this young company in a new field put a NPD process in place to improve productivity.

April W. Klimley
Editor-in-Chief

This issue also contains a special section on metrics. The section includes results from a recent metrics study (Goldense Group Inc.); *Lessons Learned* in metrics from executives at Boeing, ChevronTexaco, Air Products, and Sprint (Mark Deck); highlights of PDMA's ongoing "Metrics That Matter" workshop (co-facilitator Greg Githens); and an electronics company's case history (consultant Mark Henderson).

Also in this issue, don't miss Gerry Katz's contrarian *Viewpoint* column; webmaster David Olson's description of PDMA's new online *Yellow Pages*; and *JPIM* editor Anthony Di Benedetto's preview of the double special issue on design.

Things are popping at PDMA. Resources are expanding. Take advantage of all the association's resources, and don't hesitate to contact me with ideas, feedback, and comments about what you would like to see in *Visions* in the future.

April Klimley
Red Bank, New Jersey
December 27, 2004

Letter to the Editor

Dear Editor,
I thought I'd share with you some nice news. I just got off the phone with a guy from TI (Texas Instruments), who called me out-of-the-blue in response to the July [*Visions*] article on Process Knowledge at Analog Devices B.V.[1] He wanted to know when the second piece was coming out. The main reason he called was to discuss with me presenting at a conference. If you ever wonder the extent to which your efforts are reaching folks, here's one solid success story. Thanks!

Ken Bruss, Ed.D.
Lexington, Mass.

[1] Part 1 in *Visions* July 2004; part 2 in this issue, pages 20 and 21.

Visions 2005 Calendar

		Deadlines 2005	
Issue	**Focus**	**Editorial**	**Advertising**
April '05	Health sciences; Air Force Lab	Feb. 18	Feb. 25
July '05	Annual Review; Robert Cooper	May 12	May 20
Oct. '05	General	Aug. 12	Aug. 26
Jan. '06	NPD Metrics; PDMA 2005	Nov. 16	Nov. 30

**See Visions pages on www.pdma.org*

From the PDMA President

"Making it happen" … at the Product Development & Management Association

by Bob Brentin, NPDP, PDMA President 2005 (rbrentin@pdma.org)

What a great time to take on the position of President of PDMA. In the last few years, the association has "come of age." Like the field of Product Development itself, the association has reached a new level of success—in our case, a stronger financial base, and knowledge leadership across the product life cycle, a growing certification program, a flourishing chapter network, a revitalized connection with the academic community, and international recognition and growth. This success is the result of the commitment, leadership, and sheer hard work of the Board, immediate past President Chris Miller, other past Presidents, chapter leaders, the professional staff, and the many volunteers whose commitment and contributions make PDMA what it is.

In 2005, we will build on this strong foundation. This year, my theme is "PDMA . . . Making it happen." I see PDMA expanding its footprint even further—into new geographic areas, additional areas within the product life cycle, certification, operations, customer service, and many other areas. We also plan to grow our online *Body of Knowledge (BOK)*, to strengthen our successful national co-sponsored conference program, to build stronger ties with the corporate community, to support our local chapters more actively, and to grow in size, influence, and prestige.

Global leadership will be a major emphasis. Having come through a difficult recession, we have all seen the world economy shift and become more interdependent than ever. Globalization is a reality. Economic activity has picked up in regions of the world such as China and India. Outsourcing and education have enabled these countries to make major advances. And as their corporations become more competitive, so does the demand for information on best practices within the Product Development field.

This trend represents a tremendous opportunity for PDMA. Our association is the "thought leader" in this field, and we have the resources to provide the needed information and certification—through PDMA's own products and services from our Handbooks, ToolBooks, the *Journal of Product Innovation Management (JPIM)*; industry magazine *Visions*; online knowledge base *Body of Knowledge (BOK)*, and *New Product Development Professional (NPDP)* certification program.

Right now we have only one organized PDMA group outside the U.S., but others are in development. Recently, over 30 volunteer business, academic, and PDMA leaders met for a two-day brainstorming session and developed a global value proposition for the 29th annual PDMA International Conference in San Diego on October 22-26, 2005. The title of the conference—Innovation in Global Product Development: Driving Sustainable Growth and Productivity Across the Value Chain—reflects the wealth of expert knowledge and experience in both U.S. and global Product Development and Management that will be presented. Put it on your calendar of must-attend events in 2005!

Bob Brentin
PDMA President 2005

I encourage you not only to attend that conference, but also to become more involved in PDMA's programs and chapter events. Whether you are a seasoned expert or new to the field, you will benefit. As a beginner, you will learn faster. As a seasoned expert, you will have the satisfaction of sharing your expertise and helping this young field of Product Development and Management grow. In 2005, commit yourself to greater involvement in PDMA; make it happen for yourself and your company—and I'm sure you will benefit professionally and personally from that involvement.

Bob Brentin, NPDP
PDMA President
Midland, Michigan
December 17, 2005

Visions Seeks Global and Industry Sector Editors—

Visions plans to expand its global and industry sector coverage and is seeking contributing editors and writers. For global coverage: Europe and Asia; for industry sector coverage: Pharmaceuticals, service industries (financial and/or otherwise), software, hardware, and product design. Editors must have PD and writing experience, wide contacts, and creative ideas. Contact April Klimley at VisionsEd@pdma.org.

Visions Salutes Marty Watson and Welcomes Ken Kahn

Visions thanks outgoing V.P. Publications Marty Watson for three years of strong support and guidance. After 9/11 Marty fought hard to keep *Visions* on its regular publication schedule, which ensured continuity in our relationship with our readers. Thanks, Marty, for your perseverance and good judgment. And welcome to Ken Kahn, new V.P. Publications as of January 2005. *Visions* looks forward to soaring to new heights under your leadership.—*The Editor*

Marty Watson

Ken Kahn

Launch Pad/Chapter Report

Experts at NorCal Conference provide advice On how to ensure successful launch

by Mark A. Hart, Visions *Launch Editor, President, OpLaunch (mark_hart@oplaunch.com)*

Too many new products fail and, in some instances, the launch contributes to this failure. For this reason, the PDMA chapter in Northern California (NorCal) held a Product Launch Conference on 3 November 2004 with a wide range of expert advice on how companies can create a successful new product launch. Visions *Launch Editor Mark Hart provides readers with highlights from that conference.*

Mark A. Hart
Visions *Launch Editor*
OpLaunch

The annual conference, held by PDMA's Northern California Chapter (NorCal), entitled "Product Launch: Setting the Stage of Success," centered on how to structure a successful launch strategy and plan for a new product. According to Chapter President Patrina Mack, Managing Director of Vision & Execution, a Silicon Valley-based marketing consulting firm, this theme was selected because, "Silicon Valley Product Management professionals indicated a need for managers to learn how to better build and execute a launch plan. They felt that strategy and development often come together, but launches are often disastrous and not very well orchestrated."

Keynote speaker Elon Musk, Founder and CEO of SpaceX, a company that is developing launch vehicles (rockets) to access space, stated that his company's goal was "to be the Southwest Airlines of space" by moving faster than other companies in this sector and by comprehensively reducing cost structures. The company's targets are to "reduce the cost and increase the reliability of access to space by a factor of ten." Proof of the team's confidence is the absence of a traditional beta test of the product. The first launch, planned for early 2005, will carry a $30 million satellite into space.

Responding to customers

Musk is a cofounder and former CEO of PayPal, a company acquired by eBay that enables individuals and businesses to send and receive payments online. Originally, the company planned to create a suite of financial services, but soon began to focus on electronic payments.

What Is Viral Marketing?

Viral Marketing is network-enhanced word-of-mouth. The term was originally coined by the venture firm Draper, Fisher, Jurvetson. The rapid spread of Hotmail starting in 1997 is credited to principles, such as "the implied endorsement of a friend."

www.dfj.com/files/viralmarketing.html

Musk recalled that the engineering and product groups knew that "to win in the consumer space," they had to create "the best possible product." To promote their product at launch using viral marketing concepts, the team did the following:

- Made sign ups easy. The development team scrutinized every character in the sign up process for value. They asked customers to provide information only when it was needed.
- Provided financial incentives, such as a sign up bonus to early customers until a critical mass of users was established.

To emphasize that 'one size does not fit all' when orchestrating a successful product launch, guest speaker Michael K. Tanner, Managing Director of Adexta Inc., a consulting services company for growth-stage businesses, began his presentation "A Situational Model for Launching Products and Services" by stating, "We learn from

Attendees at the "Product Launch: Setting the stage of Success" Conference at the Oracle Convention Center, 3 November 2004.

Keynote speaker Elon Musk of SpaceX and NorCal Chapter President Patrina Mack of Vision & Execution.

Panelists Eric Krock, Brett Murray, Jonathan C. Miller, Charlie Tritschler, and Neil Kjeldsen (left to right) provided product launch anecdotes and advice.

Steven Blank (left) outlined a customer development process that is parallel to the Product Development process. Guest speaker Michael K. Tanner (right) of Adexta Inc. presented, "A Situational Model for Launching Products and Services."

experience, but we can't clone processes from our old jobs because business models are different and they change."

Tanner listed strategy framework properties that should differentiate early market products and hyper growth products. For example, the pricing model of the former should be value-based while the pricing model for the later should be competition-based. Tanner suggested that phrases like "consensual hallucination" be used to describe company managers who adopt the incorrect strategies because of a past success that existed under different circumstances.

Paying homage to author John Gray, Tanner extended the popular metaphor to "products are from Mars and services are from Venus." By mapping products and services onto the technology adoption curve, Tanner showed that services can morph from *creating the product* in an early market to *service is the product* in a mature market. To avoid strategy mistakes in a growth stage market, Tanner advised product organizations to work rigorously to streamline their product lines, while service organizations migrate their focus toward newer technologies. To avoid strategy mistakes in a mature market, Tanner concurs with Clayton Christensen et al. that product organizations should transition to marketing-led organizations instead of pushing product performance and feature sets.

Steven Blank, the author of *The Four Steps to the Epiphany: The Road Map for Successful Startups* and an entrepreneur who has done eight startups in 25 years, confidently described how to "increase the effectiveness of managing and launching new products" by focusing on customers and markets starting at the concep t or business plan stage of Product Development. He listed three types of markets (exiting, re-segmented, and new) and explained how to make customer development a parallel process to product development.

Theresa Marcroft, principal of Market Savvy, moderated a panel of industry veterans who shared anecdotes about product launch successes and failures. Panelists Eric Krock, Director of Product Management at Kontiki Inc.; Brett Murray, Senior Marcom manager at Apple; Jonathan C. Miller, founder and CEO of ProductSoft; Charlie Tritschler, V.P. of Worldwide Product Marketing at PalmSource; and Neil Kjeldsen, director of Schwab.com at Charles Schwab & Corporation, shared product launch failure anecdotes that included "my product spontaneously combusted" and "we had to change the company name because of a trademark issue." Perhaps, the holistic prescription for success could have been summarized as "have everything ready at launch because the marketplace is not forgiving."

The 3 November event attracted more than 100 attendees to the Oracle Convention Center, about 30 percent of whom were PDMA members. For the second consecutive year, Oracle was the conference's premier sponsor and host. Chris Miller, the 2004 PDMA President, provided the conference's closing remarks. He stressed PDMA's role as a thought leader in Product Development.

Mark A. Hart is a certified New Product Development professional and the President of OpLaunch.

PDMA's Northern California Chapter (NorCal) Experiences Growth and Expansion

PDMA's Northern California Chapter, which runs from San Francisco to Santa Cruz has doubled in attendance over the past three years, according to Chapter President Patrina Mack. Monthly events featuring local industry leaders speaking on such topics as "Defining and Managing Requirements for Successful Product Development," "Off shoring—What It Is and How It Impacts Product Development Teams," and "Becoming a Design Factory: The Blueprint for Competitive Advantage through Lean Product Development," draw Product Development and Management professionals of all levels from a variety of companies and industries across the Bay Area.

In addition to monthly meetings where individuals share Product Development knowledge and experience, the NorCal chapter organizes a yearly one-day conference to provide in-depth knowledge on a specific topic. The chapter also holds NPD Certification sessions, encouraging members to learn and grow in their field. Over the past year the chapter has held two certification sessions. NorCal's chapter web site is www.NorCalPDMA.org. If you want to join, volunteer, or participate, please e-mail membership@norcalpdma.org.

—Patrina Mack, NorCal President and Managing Director of Vision & Execution, patrina@visionandexecution.com

Additional Speakers at NorCal Launch Conference

Eric Krock, Director of Product Management at Kontiki Inc., "Surviving Enterprise Evaluations: You Launched It, Now You Gotta Sell It!"

Ted Finch, President of Chanimal, "Tsunami Product Launches: How to Rip Your Product into the Market and Ride the Wave."

Gretchen L Schieber, Associate Director, Corporate Planning at Affymetrix, "The Product's Launched. Now What? Introducing and Managing Technically Complex Products."

Konstantin Guericke, Co-founder and V.P., Marketing of LinkedIn, "The Shoestring Launch."

Jonathan Oomrigar, V.P., High Tech Industry at Oracle, "Successful Launch and Beyond."

NPD Viewpoint: Not so fast!

by Gerald M. Katz, Executive Vice President, Applied Marketing Science, Inc. (gkatz@ams-inc.com)

Back at the height of the "Japan, Inc." era, the time when Japanese manufacturers were teaching the West a thing or two about quality, I recall an interesting conversation with an old friend and colleague about the West's dilemma. This fellow had spent much of his career at a well-known high tech firm, and they had sent him to Japan for a year to work with their Product Development groups over there.

I asked him what he thought made the Japanese so much more successful at New Product Development than his domestic counterparts. And his response has stayed with me ever since.

"In the U.S.," he said, "all new product proposals and business plans are judged first by the green eye shade guys. And if a potential new product doesn't look like it's going to generate a decent return within a reasonable time, it gets killed – regardless of its other potential merits. In Japan," he said, "they were much more likely to start with a consideration of what the product would accomplish in satisfying the customer's needs. If they could make a strong case for that, the project could move forward, at least for a while. They figured, 'Even if we can't make a profit on this thing initially, if it really satisfies the customer's needs and we're able to sell a lot of it, we'll find a way to engineer costs out of the system over time.'"

I was struck by this comment because it just made so much sense! If you've ever written a business plan for a new product, one with no history from which to extrapolate, you know that those numbers are often pulled out of thin air. I've always been shocked watching venture capitalists go through a plan. My experience is that the first thing they look at are the numbers, looking for how fast the company reaches break even and then how long it will take until there is an attractive exit strategy. Next, they look at the management team, looking for a track record of success. Finally, and only after these first two, do they look at the product or service idea and the business model.

Gerry Katz
Applied Marketing Science Inc.

> "If it really satisfies the customer's needs and we're able to sell a lot of it, we'll find a way to engineer costs out of the system over time."

Obviously, these people aren't stupid. Certainly, the financials and the people are critical. But in most cases, those numbers are a fiction. Both the revenues and the costs rarely follow the plan – either in magnitude or in timing. And the costs can go out of whack in either the development phase, the manufacturing, or in the maintenance and servicing processes. Yet, too often, they are taken as gospel.

What this means is that many projects – some with enormous potential – get killed before they ever make it into the customers' hands. In fact, they may get killed at the conceptual phase, even before they go into formal development. And even worse, some projects do go on, based on faulty or fictional numbers, that don't deserve to and result in costly and embarrassing losses of both money and opportunity cost.

I say, "Not so fast!!" I would reverse the order of the above three criteria used to evaluate new product plans. Start with the idea and evaluate it against the voice of the customer. Ask yourself, "If we could produce it, what would it do for them? Would it satisfy an important need? And an unmet need? And what would it do for our competitive position?" Then, "Is this a management team that we think can pull it off?" And finally, "How and when can we make money at this?" If the latter looks a little shaky but the first two look promising, I would go forward – at least for a while.

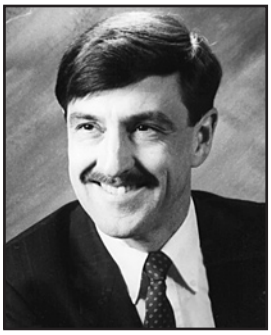
If the customers see value in it, there is a good chance that we will be able to generate enough revenue to buy some time – enough time to find ways to gradually remove costs from the manufacturing, distribution, and servicing systems. And since the competition is likely to encounter the same cost barriers, we should have a reasonable window in which to accomplish this. There is nothing more tragic for a company than to kill good ideas based on weak assumptions that look concrete when written into a pro forma, a P&L, or a balance sheet.

In Focus

Advice from PDMA's annual "Metrics That Matter in NPD" Workshop

by Greg Githens, NPDP, Managing Partner, Catalyst Management Consulting, LLC (GDG@CatalystPM.com)

Metrics enable companies to understand their performance, create effective Product Development strategies, and develop efficient practices. These realities account for the popularity of PDMA's annual workshop at its International Conference—"Metrics That Matter in NPD." Over the last four years, this workshop has been taught by Greg Githens—along with a co-facilitator, either Mary Wojtas or Jerry Groen (both with Abbott Laboratories). In this article, Greg shares some key learnings from the past four workshops.



Greg Githens
Catalyst Management Consulting

Over 100 people from as many companies have participated in the "Metrics That Matter" workshop course over the last four years. The steady interest indicates how important metrics are for Product Development (PD) and Management. Yet many entering the field for the first time—or even those who have been in it for several years—may find themselves looking for an unrealistic silver bullet. This article shares some of the learnings that participants have told us were "key" and expands upon them.

The discussion of metrics helps people to recognize some fundamental disconnects in the development of their strategy and its communication. Exhibit 1 provides a framework that ties together drivers of superior performance, showing that metrics create a focus that stimulates important questions and effective strategies. This article will help you better understand and apply the Exhibit 1 framework. More than one participant has told us, "Metrics are easy if you know what you are trying to accomplish."

> "Prescriptively, it is better to start "top down" from the business model, as discussed earlier, to derive a set of metrics that optimize performance."

Avoiding metrics clutter

New Product Development (NPD) performance is multifaceted, and you can measure NPD outcomes in many different ways, including profitability, product quality, and research and development investment efficiency, among others. Organizations can—and do—measure many things. In NPD and PD alone, there are hundreds of measures in use, resulting in what could be called "measurement clutter."

Reflecting upon this metrics clutter, workshop participants tell us they feel pressured and confused because their executives send mixed messages in their measurement and reporting requests. Consider the following four principles that can help you relieve some of the clutter, pressure, and confusion.

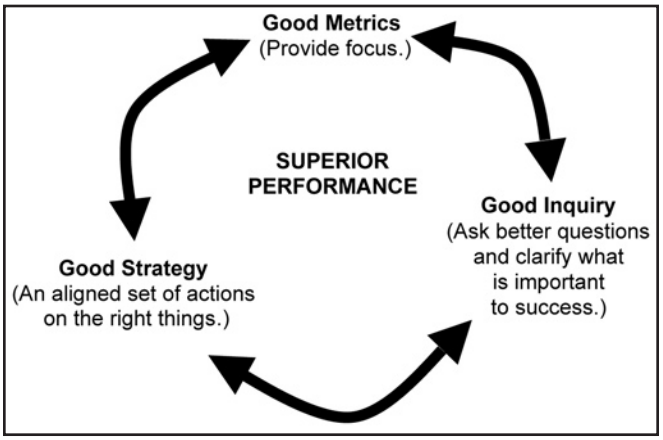
First, managers have a responsibility to look toward the future. A key learning is this: "Understand the relationship of innovation to enterprise performance and develop leading indicators." (More on this later in this article.) Secondly, the job of managers is to foster action on the right things. Communications and integration distinguish high performing individuals, teams, and organizations; so metrics are really a method for communicating our values and ideas to others. Good metrics stimulate action and bad metrics stimulate reaction. Third, managers need to select the important things that foster action. The rule is this, "Measure effectiveness first and efficiency second." Participants have told us a key learning is: "Think lean: Target no more than five measures for any given Product Development and Management arena." Fourth, accounting data, because of its historical nature, tends to produce backward-looking lagging indicators, rather than forward-looking leading indicators. The rule is this: "Balance leading and lagging indicators. Don't trap your organization by exclusive reliance on backward-looking, financial-accounting artifacts."

Business model

More than one "Metrics That Matter in NPD" participant has told us that a key learning is, "You have to understand your business model and the role of measurement within it."

The logical starting point for developing

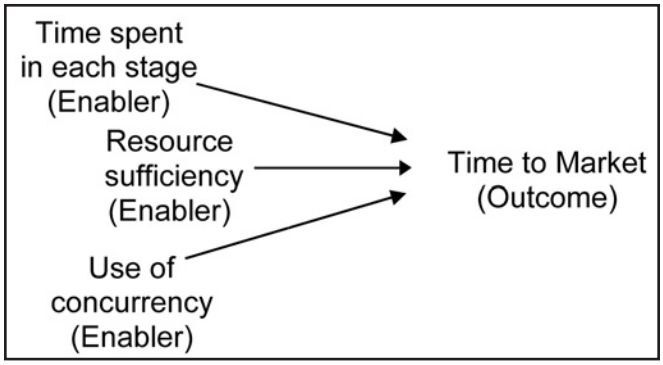
Exhibit 1: Metrics Framework



SOURCE: PDMA "Metrics That Matter" Workshop and the Author

Good Metrics, Good Strategy, and Good Inquiry are three essential elements of superior performance

Exhibit 2: Leading and Lagging Indicators



SOURCE: The Author

This chart shows three potential leading indicators (that is, metrics) that affect Time to Market (outcome).

"Metrics That Matter" is to understand the assumptions that describe how the organization fulfills its mission—its business model. The simplest form of a business model is a cause-effect relationship. Exhibit 2 on this page shows how to link leading indicators (that is, metrics)—measuring the enabler—and lagging indicators (that is, metrics)—measuring the outcome.

To identify leading indicators, first select an area of strategic interest; for example, Time to Market (TTM) as given in Exhibit 2. Then, create a map of the enablers and the outcomes, which we explain. Where TTM is the outcome, you could measure any or all of the enablers and treat them as leading indicators.

The danger of sub-optimization

Many people have been surprised to learn that metrics sometimes have an interesting "revenge effect," an ironic situation in which a focus on "hard" NPD metrics can stifle innovation. Hard metrics are those that tend to be finite, historical, and accounting-based. An example of a hard metric would be Engineering Change Orders (ECOs), which give a clear indication that an organization is expending resource hours. Companies frequently measure ECOs, but ignore "soft" measures, such as "the feature's desirability to the customer or end user" that might offer a competitive advantage in design or pricing. Hard metrics are valuable because they have a high signal to noise ratio (S/N). This means that measurements provide a clear indication or a signal that is "meaningful information," which enables the receiver to separate meaningful information from the background data; that is, the noise, or meaningless or irrelevant information. As another example, cycle time has a higher S/N than does morale; yet, arguably team morale has more influence on Time to Market.

> "Metrics are easy if you understand your organization's vision and its business model."

Many people in management roles have a low tolerance for ambiguity. The dislike of ambiguity causes people to be conservative and focus on easily measurable "process artifacts" like ECOs, sales revenues, and unit costs. A mindset that is intolerant of ambiguity is attracted to measurements that are quantifiable and precise; concomitantly, the mindset tends to filter out those measures that are "soft." However, it is the soft metrics that are more likely to be leading indicators and point the organization toward creative, value-adding solutions. For example, we once heard an executive talk about "the wow factor" or the excitement caused by a well-designed product that delighted the customer because it provided functionality with a "cool" aesthetic design that initially the customer didn't expect.

Metrics and ambiguity-avoiding mindsets reinforce each other. If your organization is "stuck in a rut;" that is, over-investing in incremental innovation and under-investing in radical innovation, consider your approach to metrics. Precise lagging indicators tend to crowd out strategic leading indicators. A key learning? You should encourage people to consider measurement as a communication process rather than an accounting artifact.

People need to guard against sub-optimization— the practice of focusing on a part of a complex system and improving that part in isolation from the larger system. Prescriptively, it is better to start "top down" from the business model, as discussed earlier, to derive a set of metrics that optimize performance.

Tailor your metrics

Once participants in the workshop have gained command of the important conceptual material; that is, the primary principles of measurement, NPD practice areas, and developing the business model, they find it relatively straightforward to tailor metrics to their organization. Mary Wojtas teaches people this useful acronym—FAME—which is explained in Exhibit 3 on this page.

To put the FAME tool to work, the work-

Exhibit 3: FAME Framework for NPD Metrics

F – Frequency	The frequency of reporting the metric. This can be tied to seasons, financial cycles, product life cycles, and projects. It answers these two questions: "How often do we measure and how often do we report?"
A –Audience	Metrics are a form of communication. It answers the question: "Who must understand and act upon the metric?"
M – Mechanics	There are a number of ways to transmit the information, including management dashboard, paper reports, e-mail updates, etc. It answers the question: "How is the information distributed?"
E – Expectations	Since management is a process of causing action to occur, we need to clarify the expected outcome of what we measure. You need to be able to answer this question, "What happens as a result of the audience viewing the metric?" If the answer is "nothing," then you are not developing a metric.

SOURCE: Mary Wojtas

Exhibit 4: The Metrics Clinic

Step	Description or Rationale
1. Select the audience	Different levels of the organization have different communication requirements. You don't want to clutter senior management reports with lagging indicators of individual tactical performance.
2. Define performance	This is the "outcomes" as shown in Exhibit 2
3. Define performance outcome metrics	This is one or several measures that allow the audience to judge whether the outcome is good or bad.
4. Identify enablers	This is the "enablers" as shown in Exhibit 2.
5. Develop the scorecard	The audience needs a way to quickly pick out the information it wants.
6. Develop influence and strategies	The job of management is to cause action to occur on the right things, at the right time.
7. Create team and organizational learning	Metrics are an important part of the organizational memory and improvement process.

A step-by-step approach for tailoring metrics to your organization's specific needs.

shop provides a seven-step facilitated process, summarized in Exhibit 4, that we call "The Metrics Clinic." Through this process, people can develop measures and metrics for a broad range of Product Development and Management activities—from individual measures to portfolio measures to process measures to enterprise measures. The steps are shown in Exhibit 4 on this page.

No Silver Bullet

Without a doubt, the topic of metrics is both important and popular. In each of the workshops, participants have told us that that a key learning is "there is no metrics silver bullet." One person's feedback captures the essence of what people need to learn about metrics. "I came in thinking that there was a 'best practice' list of metrics and left understanding that metrics are relevant messages in a communication process. Selecting metrics requires critical and strategic thinking."

In addition to co-facilitating the "Metrics That Matter" workshop at PDMA since its inception in 2001, Greg Githens has been a frequent and popular contributor to Visions.

As more companies use more R&D metrics, the "top five" metrics remain the same, according to research study

by Bradford L. Goldense, President and CEO, Goldense Group, Inc. (blg@goldensegroupinc.com); Anne R. Schwartz, Director Research & Publications, Goldense Group, Inc. (ars@goldensegroupinc.com); and Richard J. James, Director Research, Goldense Group, Inc. (rjj@goldensegroupinc.com)

New types of metrics are introduced into Product Development every week or month. Yet, according to this recent study by Goldense Group, Inc. (GGI), the "top five" metrics remain the same as those used by most companies seven years ago. The authors provide details of this study in the following article.

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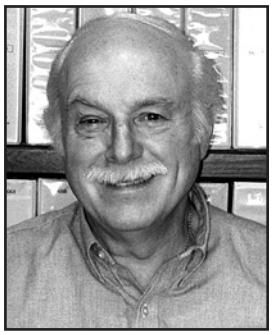


Richard J. James
Goldense Group, Inc.

Although more companies are using more research and development (R&D) metrics these days, the same top five metrics continue to rise to the top, according to a 2004 metrics study recently released by the Needham, Mass.-based Goldense Group, Inc. (GGI). This was the fourth metrics study done by the firm since 1998.

The top metrics, as shown in Exhibit 1 on this page, were "R&D spending as a percent of sales"; "Total patents filed/pending/awarded"; "Total R&D head count"; "Number of products/projects in active development," and "First year sales of new products." It is not surprising that these five have remained on top over the past six years since it takes many years to sort out the "chosen few" and for practices to be adopted across industry lines.

Exhibit 1: Top Five R&D Metrics in Use Today

Top Five R&D Metrics in Use Today

1. R&D spending as a percent of sales.
2. Total patents filed/pending/awarded.
3. Total R&D head count.
4. Number of products/projects in active development.
5. First year sales of new products.

SOURCE: Goldense Group Inc., 2004 Survey

At the same time, the 2004 study reveals that companies are using many more R&D metrics than six years earlier (1998). In fact, over twice as many metrics—75 to be exact—are in general use, compared to only 33 in 1998. This is undoubtedly the result of the improvement in internal R&D and NPD processes over time. As the R&D culture continues to mature, we would expect to see even more metrics in use.

Exhibit 2. Overall Usage of R&D Metrics in Industry (2004)

Metric	Percent of respondents reported usage
1. R&D spending as a percent of sales	78%
2. Total patents filed/pending/awarded	63%
3. Total R&D headcount	60%
4. Number of products/projects in active development	54%
5. First year sales of new products	51%
6. Percent of resources/investment dedicated to new product development	48%
7. Current-year % sales due to new products released in the past N yrs.	44%
8. First year profits of new products	38%
9. % resources/investment dedicated to sustaining existing products	38%
10. Number of products released	36%

SOURCE: Goldense Group, Inc., 2004 Survey

Purpose behind metrics

Perhaps, not surprisingly, the study shows smaller changes between the use of metrics in 2002 and today (2004). The purpose of the study was to assess usage of R&D metrics in industry. Measurements of the R&D function serve many purposes from justifying R&D investment to being an overall indicator of the maturity of the function. Process maturity capability models are built on this basic principle. Competitive pressures of the 1990s and the continued globalization of product design and manufacturing by companies have increased the inherent variability of the Product Development environment. Metrics to improve business and technical monitoring are on the rise at all levels of R&D and Product Development. It appears that lots of measures are being tried out in order to find the most useful metrics. These emergent measures will then probably become adopted by a large percentage of companies.

Structure of the study

GGI's *2004 Product Development Metrics Survey*, the study, was conducted by sending questionnaires to a wide distribution of Product Development professionals in industry in North America, Europe, and Asia. Replies were received from 202 companies, ranging from industrial and medical products to aerospace, defense, electronics, and chemicals industries. Respondents were asked to report which met-

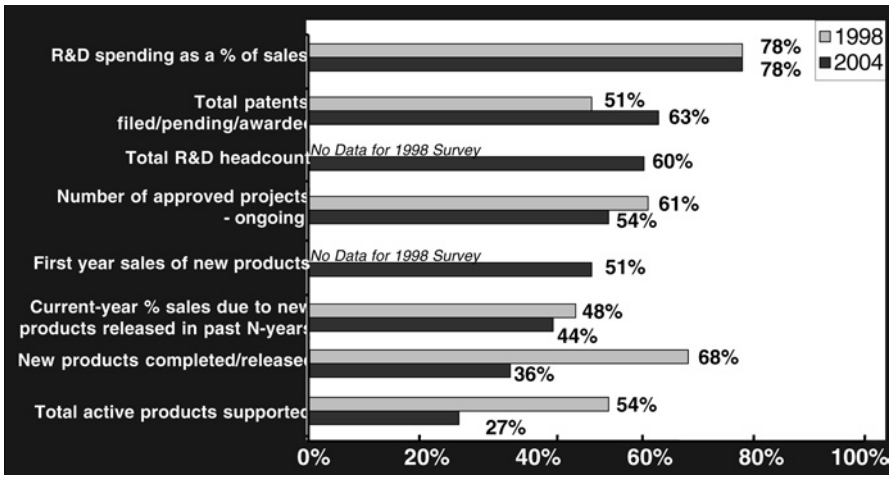
rics were in use in their company by choosing from a list of 75 commonly used R&D metrics. The 2004 survey was completed by respondents from April through early August 2004 and published in October 2004.

R&D metrics usage

In 2004, five metrics are being used by more than 50 percent of respondent companies, the same number found in GGI's 1998 survey. "R&D spending as a percent of sales" is used by 78 percent of companies, followed by "Total patents filed/pending/awarded" used by 63 percent of respondents. Exhibit 2 on page 9 shows the top ten most commonly used R&D metrics in 2004 for the companies surveyed. As in prior years, the first metric listed is required for financial reporting, and the second metric is mandated by legal and regulatory requirements. The fourth metric listed is the first measure originating in the R&D department as opposed to being "owned" or strongly shared by another business function. When we compare top metrics use with prior surveys, as shown in Exhibit 3 on this page, we see more or less the same usage in 2004 compared with the results reported in 1998.

Many more metrics have emerged over the past six years. Seventy-five are now generally "in use" compared to GGI's first survey in 1998 when only 33 were generally "in use." This clearly shows that companies are experimenting with different metrics to find the best ones to measure and improve their R&D processes. As the R&D function matures and companies continue to improve their internal processes, we would expect to see more metrics in use.

Exhibit 3: Corporate Usage of R&D Metrics: 1998 versus 2004



SOURCE: Goldense Group, Inc., Needham, MA

Corporate metrics versus project metrics

Project metrics are used by project or functional managers to measure project performance and/or resultant business performance of these project investments. While these metrics are numerous, they are usually not consistently rolled up to create an overall R&D performance metric. Corporate metrics, which are the focus of this research, are used to measure R&D as a whole; e.g., the overall measure at a V.P. of R&D business level. This research covered only project-level measures that were rolled up to a top-level number that is the "average of all projects." Rolled-up project measures contributed to an increase in the number of measures being used.

More corporate measures are also being tested. Increases in the use of R&D metrics as a whole are evident in the less-used metrics. In 2004, the 25th ranked metric was used by 23 percent of companies. This is a nearly threefold increase over the 8 percent level of usage of the 25th ranked metric in 1998. This evidence of greater usage of metrics shows how metrics have penetrated many companies; simply put, more companies are using more metrics. In 2004, each of the 75 metrics listed was used by at least one company. Usage of any of these metrics, however, still has a long way to go to becoming "standard." In the long run, a few metrics will rise to become commonplace across industry.

The lack of development of a standard set of R&D metrics does suggest some reluctance of the R&D function to measure itself. The high growth economy of the 1990s greatly increased R&D competitiveness, but it did not lead to the development of any "new" corporate R&D metrics, except for one in the specific area of "Return on Innovation." A number of companies are trying various calculations generally expressed as new product profits divided by R&D investment for the cumulative period of time they consider products to be new. It is encouraging to see that two measures of sales and one measure of profit have now entered the top ten metrics.

> "It takes many years to sort out the *chosen few* and for practices to be adopted across industry lines."

The evolution of R&D performance measurement is likely to parallel the manufacturing measurement evolution of the 1980s and the distribution evolution of the 1970s. Approximately 25-30 metrics will emerge as an accepted set that will be used by 60 to 80 percent of R&D organizations in industry. This has been clearly seen in other business functions. Leading edge companies will embrace these new measurements early, but it will take two to five years for them to become accepted, embedded, and fully utilized. The fast following companies then adopt the new metrics over the next one to three years. This first quartile of industry generally takes up to eight years to adopt the new measurements. Two to five more years are expected for the second quartile of industry, at which point the new metrics reach the 50 percent level, a stage when benchmarking can be practically achieved. Once this occurs, software tools emerge to automate the measurement process, which drives adoption by the rest of industry. This process of R&D measurement maturation is projected to take place over the next two decades. GGI believes the rise of companies using 25 metrics from 8 percent in 1998 to 23 percent in 2004, the past six years, has largely concluded the adoption process by the first quartile of industry.

The lack of an agreed-upon, commonly-used set of R&D metrics suggests that we are still in the early stages of R&D process and measurement maturity. Legally required metrics and basic business control metrics will likely always remain at the top of the list of common metrics, but look for true R&D-driven performance metrics to surface over the next eight to ten years. The real challenge is to determine the set of metrics that correlate with business results. These will be the ones that become adopted by R&D. R&D will then move through a step function increase in business performance as has been witnessed in other business functions, and the competitive playing field will elevate once again.

Lessons Learned

An up-close look at using metrics effectively across the life cycle: Examples from Boeing, ChevronTexaco, Air Products, and Sprint

by Mark J. Deck, Director PRTM (mdeck@prtm.com) With input from four practitioners: Chris Chadwick, Vice President F/A-18 Program, Boeing; June Gidman, Strategic Research Manager, ChevronTexaco; Naser Chowdhury, Global Product Management, Air Products, Inc.; Mike Coffey, Assistant Vice President, Customer Solutions Product Management, Sprint

Sometimes the best way to evaluate different metrics is to see them in action. Mark Deck gives you an opportunity to do that. In his regular "10 Lessons" column, Mark talks to four NPD practitioners to find out what metrics their companies are using for NPD, and then shares this information and his own insights with readers.

For any company striving to improve its ability to bring new products and services to market more efficiently and effectively, robust metrics are important. Good metrics indicate the health of products, projects, portfolios, and the related processes that support them. Using them well helps companies improve NPD processes and outcomes, manage risk, set performance targets, reward performance achievement, and anticipate problems.

The concept is compelling and well understood, but many struggle to use metrics effectively. To start with, the possibilities are daunting. There are quantitative and qualitative metrics, predictive and confirmatory metrics, financial and behavioral metrics, and metrics that gauge time, cost, and quality, to name a few. It is far easier to want good metrics than it is to have them—reliably, continuously, at the right level of detail, without being a burden.

For those who are using metrics effectively, what makes the difference? What metrics work best? What does it take to make them part of doing business? How should they be managed? We asked several practitioners about this and combined their insights with some of the most salient learning revealed about metrics at the August 2004 PDMA Metrics conference. Here are the results—10 "lessons learned"—to keep in mind.

Lesson 1: Use hard and soft metrics—Just the term "metrics" conjures up the notion of quantitative measures of outcomes like cycle time or defect rate. At Boeing, a leading global aerospace company headquartered in Chicago, Ill., large complex development programs are managed with metrics that assess cost, quality, risk, and schedule reliability. But according to Chris Chadwick, Vice President of the F/A-18 program, some of the most useful metrics are soft metrics. A good example is "help needed." Chris explained that Boeing encourages team leaders to ask for help when they hit a challenge that might throw them off course. If a program has little or no "help needed" events, that's a sign of possible trouble. The very nature of these complex programs is such that help will be needed from time to time, and reaching out to tap broader expertise that is resident across the organization is a great way to resolve problems and avoid trouble. We saw a different example at ChevronTexaco, a leading global energy company headquartered in San Ramon, Calif. June Gidman, Strategic Research Manager, says, "Bang for the buck measures can be the most useful but the most difficult to measure. How do you know what part of a successful well was enabled by a certain technology? It takes a certain amount of judgment to get it right."

10 Lessons Learned

Effective Metrics for NPD

How to select the right metrics for your organization and get the most out of them.

1. Use hard and soft metrics.
2. Less is more.
3. Avoid the trap of unintended consequences.
4. Look backward and forward.
5. Measure internally and externally.
6. Close the loop.
7. Make metrics matter.
8. Don't let metrics go stale.
9. Use metrics to learn.
10. Make metrics readily visible.

Mark Deck
Pittiglio Rabin Todd & McGrath

Lesson 2: Less is more—Almost anyone who gets involved putting together a metrics program will tell you to beware of too much complexity. The many outcomes you might want to measure at the multiple levels that exist, with the variety of possible measures, all make it possible to get quickly mired in metrics. Mike Coffey is Assistant Vice President for Consumer Solutions Product Management at Sprint, a leading communications services provider based in Overland Park, Kan. Mike has put together a balanced scorecard of product metrics for managing products through their life cycle. Mike's counsel is, "Start small and measure just a few things. Then decide which additional metrics to buy." Mike's notion aptly recognizes the cost of additional metrics. The level one scorecard he uses has one or two metrics in each of four distinct categories. It took about six months to get a level one scorecard in place for each product in the portfolio. Mike also recognizes that some metrics are more important than others. "In our business, customer satisfaction and operational performance seem to drive most of the other lifecycle metrics. When customers are happy, that's a leading indicator of their intention to keep using the service." Naser Chowdhury, the Director of Global Product Management at Air Products, agrees. Air Products is a leading global provider of gases, performance materials, and chemical intermediates, headquartered in Allentown, Penn. According to Naser, "Simplicity is key." Air Products uses just a few metrics at

each level, such as financial return relative to the plan at the top level, product cost index and marketing efficiency at the second level, and more granular and tactical metrics like engineering change orders at the third level. Structuring metrics into levels is a good way to help keep them simple.

Lesson 3: Avoid the trap of unintended consequences—One of the frustrating aspects of Product Development metrics is that measuring one kind of outcome and working to improve performance against it can cause unintended problems with other outcomes. Take time to market, for example. For a company that is regularly slower to market than its major competitors, products will tend to be less fresh and often less competitive on average, putting it at a disadvantage in many industries. But focusing on time to market alone without also measuring quality, for instance, could lead to disaster. The idea is not to sacrifice speed for quality; it's to be as fast as or faster than the competition, all other things being equal. At Air Products, a similar challenge revolves around conflicts between different metrics, such as engineering efficiency and reuse. Naser Chowdhury at Air Products explains that improving reuse improves the total cost of capital—a good thing. But that lower cost of capital drives up their measure of engineering efficiency, the ratio of engineering cost to total project capital. That kind of metrics conflict needs to be avoided.

Lesson 4: Look backward and forward—Some metrics are like rear view mirrors—they tell you what has already taken place. Others act more like fog lamps, helping you see what might be a bump in the road. Both are important. Take Boeing, for example. Programs use earned value measures to get an accurate read on costs to date relative to progress. But they also use metrics, such as weight maturity, that predict whether the weight will eventually meet target constraints. "We also use trend analysis on static metrics to get a read on possible problems before they occur," says Chris Chadwick at Boeing. A good example he cited was doing trend analysis on software errors as a way to assess if they're gaining more than they're burning off.

Lesson 5: Measure internally and externally—Sometimes it's easy to measure only what's in your own four walls and overlook getting measures about the outside world. That is understandable because what you can more easily control is probably easier to measure. But what do you do if your development chain spreads across suppliers and other partners? And what do you do to see how others in your industry match up on key performance metrics? For the latter, companies rely on benchmarking. At ChevronTexaco, June Gidman indicates that the company benchmarks its capital programs, using performance benchmarks provided by an external firm specializing in capital projects benchmarks. This gives ChevronTexaco a way to assess cost, performance, and delivery, for example, relative to similar competitors. As for measuring outside the development chain, Boeing uses an interesting metric they call *Supplier Line of Balance*, which tracks whether suppliers are accomplishing their work at a rate fast enough to avoid becoming a bottleneck. They also track parts shortages and supplier health as predictive metrics that anticipate issues with the external partners they rely on.

> "Good metrics provide an indication of the health of products, projects, portfolios, and the related processes that support them."

Lesson 6: Close the loop—All too often in New Product Development, forecasts are made that are never validated. What's needed is to close the loop and measure the outcome relative to the original forecast. As simple as this sounds, it can be difficult in practice. First, there is the availability of the information, sometimes hard to come by. Second, there is the tendency to want to move on to the next thing, so no one really wants to know what happened after the fact. Being able to close the loop on metrics can be incredibly powerful. For example, Air Products now uses make-good metrics and ties them to performance incentives. HR sets specific goals with management based on past performance and then rewards achievement of target performance. That may pay off a year or two later, in some cases. Another good example of closing the loop can be found at Sprint where product metrics are determined before products are launched, and product managers are paid part of their bonus based on the accomplishment of that plan.

Lesson 7: Make metrics matter—This may be the most important lesson learned. "This is the key leadership challenge," says June Gidman of ChevronTexaco. "Metrics fail when people can't see how they can have an impact on them. Individuals need to see how they contribute to the measured outcome." Companies can do this several ways. At Sprint, Mike Coffey explains, "Product managers themselves set lifecycle performance targets. They then work with the supply side, customer service, and marketing to determine what's needed to deliver them. This helps each product manager have a personal level of passion for his or her product." At ChevronTexaco, metrics are tied to decision-making. There are training programs and certification requirements for decision-makers, aimed at ensuring quality decisions. At all four companies, performance goals for key metrics are linked with both the annual planning process and individual incentives. Integrating metrics into the way the business is run is another way to make metrics matter for everyone.

Four Practitioners Share NPD Metrics Expertise

Author Mark Deck of PRTM interviewed four practitioners about how their companies use metrics today.

- Chris Chadwick, Vice President F/A-18 Program, Boeing
- June Gidman, Strategic Research Manager, ChevronTexaco
- Naser Chowdhury, Global Product Management, Air Products, Inc.
- Mike Coffey, Assistant Vice President, Customer Solutions Product Management, Sprint

Lesson 8: Don't let metrics go stale—Metrics are not something to simply set and forget. Success with metrics appears to require ongoing tuning. Air Products provides some good examples. "We regularly evaluate metrics to make sure they're getting at what we need as a business," says Naser Chowdhury. "We recently added a make-good metric to our incentive system. Prior to that, incentives were more focused on project execution alone." Naser also explains that metrics that measure impact can be complicated and ambiguous, making it necessary to simplify them to ensure adoption or change them to accurately capture the effect intended. Naser reports that the company also changes how it interprets metrics over time. At all four companies, it is clear that their metrics programs have been in place for several years, changing along the way, adding new metrics and taking some away.

Lesson 9: Use metrics to learn—This lesson follows directly from the previous one. If you are using metrics to learn, then you are bound to be continuously improving them. At Boeing, Chris Chadwick describes a culture of learning where metrics are essential. "If someone says, 'I can't measure it,' I know I have trouble. We encourage our people to devise new metrics all the time and to drop other metrics that are no longer useful." Boeing encourages learning through an approach called the Program Independent Assessment. It is a non-advocate review of a program, focused on helping that program overcome challenges to achieving a successful outcome. According to Chris, "The program independent assessments spread best practices and help create new metrics." Chris indicates that Boeing conducts annual assessments on how well each program is using program management best practices, including how well metrics are used. In other words, they have an explicit mechanism to gain knowledge about what they are learning from metrics in order to help them learn even more. According to Chris, "We want to ensure that there is a help-needed culture across the organization—a learning, working-together atmosphere that eliminates surprises. It's when surprises are hidden that there's a problem."

Lesson 10: Make metrics readily visible—This final lesson relates to several previous ones, including learning, closing the loop, making metrics matter, and less is more. The more visible metrics are, the more they will be relevant and drive learning. One way to make metrics visible is through good communication—which requires not only clarity but also simplicity. June Gidman of ChevronTexaco indicates that good communication is an important attribute for some metrics. It helps to communicate broad enterprise performance goals, such as "Aiming for Zero Incidents," a ChevronTexaco enterprise performance goal. At Boeing, Chris Chadwick associates visibility with learning. According to Chris, "When a new measure is reported, you can set new chinning bars." Making metrics visible seems to naturally drive people to work to improve performance against the metric. A common practice reported by several of these companies is to present performance against metrics in a simple scorecard that shows status using red, yellow, and green colors where red signifies a problem, yellow indicates a potential issue, and green means performance is within goal. This kind of dashboard alerts users to potential problems, in some cases letting them access more detailed metrics to help diagnose and act on root causes.

Mark J. Deck, a Director at PRTM Management Consultants, is co-leader of the Product And Cycle-time Excellence® (PACE®) practice. He was PDMA president in 2002 and headed the PDMA Body of Knowledge (BOK) project in 2003.

Case History

Using a customer-centric approach to align company and NPD metrics

by Mark Henderson, Principal, Xoterix (markh@xoterix.com)

Few companies are able to establish consistent and meaningful metrics across all company departments, which are closely aligned with the New Product Development (NPD) function. However, some companies are achieving this goal today, and author Mark Henderson gives us a case history of success.

Mark Henderson
Xoterix

When I was working for a medium-sized, niche U.S. electronic equipment manufacturing company during the pre-2000 boom, the company saw the need to have consistent and meaningful company performance metrics that every employee could understand and influence. The company was facing enormous demands in the marketplace, including new and aggressive competitors, customers abandoning the notion of brand loyalty, and rising quality and value expectations. Of course, we had to factor in the ever-present requirements of the shareholders to increase revenues, margins, and profits.

> "At first glance, establishing practical company-wide metrics was a difficult task."

The path to success was apparent: We had to develop a slew of new products and services, and the company needed to focus its efforts in the New Product Development (NPD) area, including implementation of a comprehensive NPD process. We did not, at that time, have company-wide metrics. I was involved in creating these metrics and making sure they were aligned with both the goals of the company and NPD. We wanted to implement straight-forward measures of performance across the organization.

At first glance, establishing practical company-wide metrics was a difficult task. Measures that made sense in the NPD area did not readily transfer over to finance, manufacturing, or other departments. The simple solution to this puzzle came from stepping into the customers' shoes and examining what was really important to them.

Measuring customer satisfaction

To try to better understand the relationship between customers and the company, a simple process model of our company was drawn[1]. The model essentially showed that there were several points where it was important to pay attention to our customers' voices; and, via internal processes, we needed to deliver new and existing products and services to satisfy them. However, we lacked consistent metrics across the organization to measure how we satisfied the customer or how the company performed internally.

The ultimate barometer of customer satisfaction is increasing sales. What became apparent to us, in the pressure cooker of the "bubble economy," was that customers wanted the highest quality products, and they wanted them when they were ready to use them—no sooner and certainly no later.

One definition of quality is "satisfying the user's stated or implied needs." But how were we to quantify quality or make a metric of it? Our answer was to define quality as an *absence of defects*—since defects can be measured—and we could measure "defects" in all of our interactions with our customers.

To address the "when they need our products" parameter, we established the notion of *on-time delivery*—delivery timing that is pre-agreed with the customer, regardless of what is being delivered.

What matters to the company?

A company must not only satisfy its customers, it must satisfy its employees and shareholders, and make a profit at the same time. Profits come from income and increase—if income increases or costs decrease. Since the goal of most companies is to grow, increased revenues are required.

With this simple logic in mind, we decided two more metrics were appropriate—*increase in profits* and *increase in revenue*.

Putting it together—four metrics

We ended up creating four metrics categories which are shown in Exhibit 1 on this page. We felt these metrics could unify the customer and company objectives, while at the same time relate to the jobs of everyone in the company in a quantitative way.

Next we needed to make sure that each department and job could directly influence these categories, and that metrics could be established that directly measured performance. The result was a definition of the categories and their meaning. The definitions were crafted with the intent that every job in the company, every person, would impact the desired results,

Exhibit 1: Four Metrics Categories

Four Metrics Categories

- No Defects
- On-Time Delivery
- Increase in Income
- Increase in Profitability

SOURCE: Xoterix 2004

Guidelines for Customer-Centric, Company-Wide Metrics

1. Remember: "You can't manage what you don't measure"
2. Have customer-centric metrics
3. Have company-centric metrics
4. Have a small total number of company metrics
5. Develop consistent measures in each department
6. Engage in regular company review and action

SOURCE: Xoterix 2004

and be measured in consistent terms.

We pondered the metrics carefully. They were revised early and often to ensure their usefulness and to avoid artificial or contrived metrics. Concurrently, we established realistic, but challenging targets for each of the metrics.

The Four Metrics and NPD

Improved and measurable NPD was the primary focus although the genesis and emphasis of the metrics categories was customer- and company-oriented. It was important to have NPD metrics that aligned with the company-wide metrics, and yet were meaningful and practical within the development function.

In our organization, the overall NPD process was owned by a nominated Product Line Manager, a marketing function with marketing being responsible for product definition and validation. Product Development was responsible for the detailed design and implementation, drawing on other departments as required.

The four metrics the company settled on for the NPD functions in the Marketing and Product Development departments are described below.

No Defects Metric

Our internal NPD processes tracked all feature requests and bugs in products that had reached internal test stage—an "alpha test"—or beyond—a "beta test"— and shipped products. Our initial idea was to use the counts of unresolved issues for the *No Defects* metric, but we wanted to ensure that old issues were not swept under the carpet—hence, we settled on the *total age* of all uncorrected features for marketing or uncorrected bugs for Product Development. This number could be reduced by eliminating many newer issues or fewer older issues—giving some balance to the prioritization of problem resolution.

> "It was important to have NPD metrics that aligned with the company-wide metrics."

On Time Metric

For Product Development *On Time* was a straightforward metric. All of us involved in NPD are familiar with project schedules and, unfortunately, schedule slips. The *On Time* metric was simply defined as the total days of schedule slips for active projects. Bringing in projects or phases early would reduce this number as would delivering a complete Product Development.

We could have picked the same *On Time* measure for marketing; however, we settled on the notion that *On Time* for marketing should refer to how well marketing hit the *market window*. We decided that this measure should be the ratio of the revenue projected in the project business case to the actual revenue generated at the reporting interval. This metric would thus suffer if the product was not available on schedule, but it would also suffer if the marketing prediction of adoption or uptake was incorrect.

Given the situation of the company, we needed to have our revenues increasingly come from new products. Since marketing is largely a "futures game," we picked a marketing metric for Increase in Income that would reflect the *projected* contribution to the company sales if the business case materialized as planned.

For Development, we observed that the contribution to revenue increase would mainly come in a step-wise fashion as each product was delivered to Production. Hence this metric measured the value delivered, as predicted in the project business case, as a percentage of the value of all projects currently in Development.

Marketing must drive NPD to increase revenues and margins and, hence, to increase profits; so the metric we established for increase in profit compared the current gross margin of the company's products to the margins projected in the

Exhibit 2: Department Monthly Metrics

Department Monthly Metrics

	Marketing	Product Development	Sales	Production	Customer Services	Entire Company
No Defects	Total age of unimplemented feature requests ("feature list")	Total age of uncorrected product defects ("bug list")	Orders booked vs. orders forecast (in dollars)	Number of Customer defects (failed to satisfy Cust.)	Number of unresolved Customer issues ("service tickets")	Total Number of defects Customers have experienced
On Time	Revenue realized vs. original business case (over time)	New product development schedule slips vs. original plan	Orders booked vs. orders forecast (in time)	Days late for delivery	Total age of unresolved issues	Total number of days late Customers have experienced
Increase Income	New product business case value as % of Sales Forecast	% of potential revenue delivered	New customers added	Increase in value shipped	Number of resolved Customer issues	Change in Income
Increase Profit	Ratio: product business case margins to current gross margin	Ratio: potential business case revenue delivered to dev. costs	Ratio: department costs to orders booked	Ratio: department costs to value shipped	Ratio: department costs to value shipped	Change in EBIT Profit

SOURCE: Xoterix 2004

business cases of active NPD projects. To improve this metric, marketing would need to conceive and plan products with improved margins.

Profit Metric

Exhibit 2 on page 18 shows that Profit was measured company-wide by two metrics—increase in income and increase in profitability. For the Product Development income metrics, we used an efficiency metric—*the ratio of the revenue delivered to the development department costs for that project.*

Monthly Metrics and Review

The metrics shown in Exhibit 2 were measured on a monthly basis with each department manager responsible for gathering the information. The information required was readily available through existing tracking systems, such as business cases, bug database, features database, customer issues, and through the financial and manufacturing systems. Managers prepared a short summary of the underlying reasons for each result obtained. A monthly management meeting was held to review the metrics results, and to decide upon and assign priorities and corrective actions. Prior corrective actions and target values for each metric were reviewed as well.

The metrics were presented, graphically and numerically, to the entire company at a monthly "all hands" meeting. Each metric was reviewed, and the underlying issues and corrective actions explained – and praise given! The nature of the metrics was such that no sensitive financial data was exposed although employees were strongly cautioned that all the data was confidential. Graphs summarizing the metrics and target for the last 12 months were displayed on a central bulletin board for on-going review.

Measurable Results

The simplicity of the Four Metrics allowed all employees to immediately understand what they needed to do, although a period of a few weeks was required to train everyone and have them understand how their efforts related to the desired results and metrics. Little resistance was experienced although there was some initial skepticism about how quickly improved results would be seen in the measurements. The majority of employees, however, felt immediately involved and realized that what they did could directly impact the results of the company. They connected the corrective actions to the causal forces and enthusiastically participated in solving problems. They also felt that they were all "pulling in the same direction" since every job was being measured in consistent terms.

A final touch, to constantly remind the staff of the performance of the company was that the price of sodas and snacks in the lunch-room vending machines was linked to the monthly company metrics – low soda prices for improving company performance, more expensive sodas otherwise. This simple barometer was highly effective in further involving people and reminding them of how we were doing!

> "The majority of employees felt immediately involved and realized that what they did could directly impact the results of the company."

The most important result was that the company was able to measurably improve its performance. Metrics targets were frequently hit or exceeded, and enthusiastically celebrated. Targets were made more challenging, and even then they were often hit again. When targets were not being hit, everyone was aware by how much and what was to be done to correct the situation. In one sample year, defects in deliveries to customers were reduced by a factor of ten, on-time delivery improved by a factor two, revenue growth increased by a double digit percentage, and profitability increased several points.

Consistent implementation

Adopting a customer-oriented view of the delivery of products and services helped the choice of a small set of practical metrics to gauge company performance. Some guidelines for customer-centric, company-wide metrics are shown in the box at the top of page 18. Establishing department metrics and NPD metrics that were, in particular, consistent with company-wide definitions meant that everyone worked to the same goals and that their performance was measured consistently. Implementation of this system was relatively painless and led immediately to measurable improvements in the company's business results.

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[1]A chart, "Process View of a Customer-Driven Product Company" is available by contacting the author directly (markh@xoterix.com) or via the website www.xoterix.com

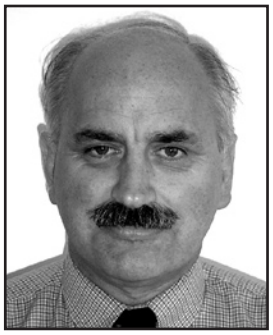
Mark Henderson is Founder and Principal of Xoterix, a Los Angeles-based company that helps Product Development companies improve their business results through better NPD methods and processes.

Analog Devices: Part II

Sharing of Process Knowledge can result in gains in Product Development

by Brian Donnellan, PhD, Analog Devices B.V., Limerick, Ireland (brian.donnellan@analog.com), and Kenneth Bruss, Ed.D., HDA Consulting (kenbruss@hdaconsulting.com)

With globalization, Process Knowledge-sharing (PK) has become of particular importance in the New Product Development (NPD) process. This is because effective use of PK can help companies more effectively leverage R&D investments—and avoid reinventing the wheel. In the second part of this series, the authors expand their discussion of the use of PK at Analog Devices B.V.



Brian Donnellan
Analog Devices B.V.

Kenneth Bruss
HDA Consulting

In our first article in July *Visions*[1], we explained the details of how Process Knowledge (PK) can be used effectively in the New Product Development (NPD) process to achieve a number of savings. Exhibit 1 on this page illustrates some of those savings, which were achieved when developing Product Y for an Asian manufacturer of IC testers. In the second part of this two-part series, we will provide additional examples of the effectiveness of Process Knowledge-sharing at Analog Devices B.V., a subsidiary of Analog Devices Inc. (ADI).

Two examples

The two business cases we will explore are very different. What is common to both is that during project planning, ADI recognized that leveraging pertinent knowledge within the organization could facilitate attainment of project goals.

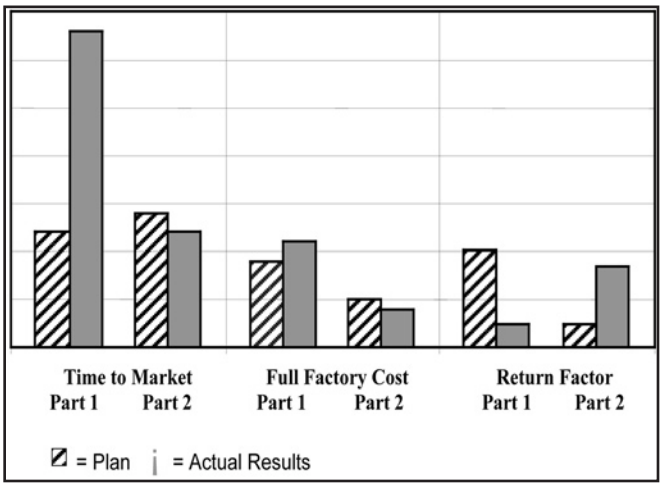
Off-shore test transfer

In the first example, ADI wanted to transfer all test operations for the entire company to an off-shore location. Centralizing all test operations in this off-shore facility was a strategic decision made in fiscal year 2001. This move represented a significant cross-functional challenge involving the worldwide manufacturing organization and all of the product lines. One ADI Product Line (PL) was particularly hard hit by this decision since their products are very different from the products this off-shore facility had traditionally handled. The engineers at the off-shore site needed to develop new expertise with the processes, packages, and equipment to handle this Product Line.

Recognizing these challenges, an off-shore planning team was formed. The team began by examining After Action Review lessons, learned data from previous transfers. Building on this information, they developed a comprehensive plan, which devoted particular attention to identifying potential obstacles unique to their products as well as counter measures. Detailed discussions were held involving the PL and ADI's manufacturing organizations, resulting in revisions to the plan to ensure it met the needs of both groups.

A key plan objective was establishing an incremental learning curve for the off-shore engineers. The order and priority of transferring products was based on capacity, demand, similarity, complexity, and the new technology and processes the off-shore facility would need to establish. Products were staged in a deliberate pattern of increasing levels of complexity. Detailed discussions were held involving the PL and ADI's manufacturing organizations, resulting in revisions to the plan that fit Product Development and manufacturing schedules.

Exhibit 1: Impact of Enhanced Information Sharing Processes



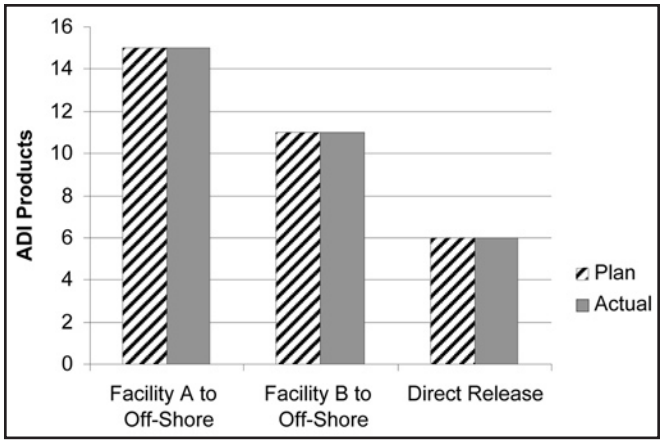
SOURCE: ADI Internal Process Guidelines

Implementation

Weekly teleconferences were held to review project status and ensure everything stayed on track. These virtual team meetings maintained close communication, and successfully resolved most technical and logistical real-time issues that arose during implementation. Web-based tools were used to track the status of all open action items, action items, and document decisions. During this time, several engineers received training at transferring sites.

Whereas this project was by no means a Knowledge Management initiative, it involved an application of knowledge-sharing principles—and their use clearly contributed to the project's success. Although it is premature to quantify all the benefits of a smooth transfer effort, the main transfer goals were achieved, as Exhibit 2 on page 21 shows. It was especially important that the transfer be transparent to customers. Complications would have adversely impacted both customers' and ADI's revenue and Time-to-Market goals. At the off-shore planning team's final meeting, an After Action Review was held to identify key learnings ADI could apply to future multi-site, cross-functional projects.

Exhibit 2: Off-Shore Transfer and Direct Release



SOURCE: ADI Internal Report

R&D Center in Ireland

Our second example involves a project which is underway in ADI's R&D center in Ireland. A "knowledge" business process was initiated at this center and positioned in a business process map for the site, as shown in Exhibit 3 on this page.

This initiative was launched to address two problems. First, up until that time there had been several successful knowledge-related activities; but since they were somewhat ad hoc in their composition, it was difficult sustaining momentum over time, and we were reverting back to less-productive practices. Secondly, productive practices in knowledge-sharing were somewhat localized in separate business units, and were not being successfully deployed elsewhere in the organization.

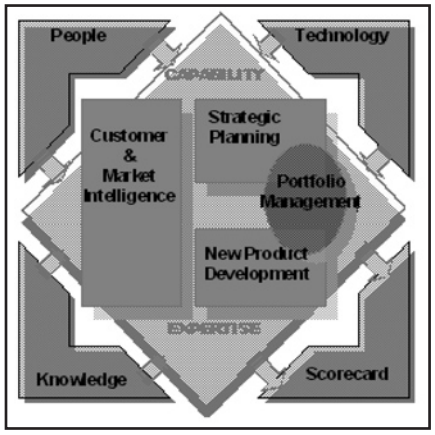
The proposed solution involved elevating and linking knowledge-sharing practices to a more holistic enterprise model, thereby developing a better chance for these practices to be accurately replicated and disseminated throughout the organization. We expected that this approach would also make it easier to sustain the practices and the benefits we were achieving.

The value of mapping business processes has been articulated by many experts[2]. The map shown in Exhibit 3 depicts a Product Development activity comprised of eight business processes. The map was developed with a deliberate structure in mind. The intent was to develop an image of an infrastructure with four cornerstones supporting a commercial engine that contained four processes. The four cornerstone processes were identified as: People, Technology, Knowledge, and Scorecard. These pivotal processes were seen as fundamental enabling processes whose role was to provide support for the four processes that comprise the commercial engine of the company in regards to Customer and Market Intelligence, Strategic Planning, Portfolio Management, and New Product Development. A process leader—and deputy—were assigned to each core process. While the initiative is too new to report benefits, testament to the perceived business value senior management sees in this activity is the fact that during a two-year economic downturn, resulting in cross-the-board cost cutting, this initiative remained on track and funded.

Knowledge-sharing

However, even with the successes outlined here and in the first part of this series, ADI is not satisfied with its KP-sharing successes. The company continues to work hard to improve the quality of communication and knowledge-sharing across the organization.

Exhibit 3: New Product Development Core Business Process Map



SOURCE: ADI Internal Business Plan document

Two primary methods of PK sharing are being used: One is called Codification, the other Personalization. The goal of the Codification approach is to provide a high-quality, reliable means of re-using codified knowledge though the use of electronic repositories. It is a "people-to-documents" approach using IP Exchange databases, Team web sites, et al.

The goal of the second approach—Personalization—is to leverage the expertise and wisdom developed by individuals and teams within the company. This "tacit knowledge" is best shared by promoting person-to-person interaction through such venues as Technical Reviews, Brown Bag Seminars, and After Action Reviews.

Conclusion

The central tenet of ADI's approach to creating and sharing PK is that to be successful, these activities must be embedded within our existing, day-to-day business processes. We achieve this in a number of ways. For instance, we recognize that the organization possesses unique business and technical knowledge, and we deliberately work to share and leverage that knowledge on an on-going basis. Particular attention is devoted to identifying opportunities during planning and implementation of the development effort for knowledge sharing and creation. By capitalizing on these opportunities, ADI has reduced development expenses, accelerated cycle time, and increased profitability. Upon project completion, After Action Reviews and Product Line Review meetings are held as part of a continuous improvement process to assist in improving both product selection and execution. Through these and other actions, ADI successfully leverages our knowledge assets as a source of competitive advantage.

Brian Donnellan, Ph.D., works at Analog Devices B.V. in Limerick, Ireland, and at the National University of Ireland in Galway; Kenneth Bruss, Ed.D., is with HDA Consulting of Lexington, Mass.

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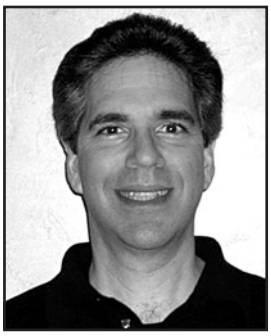
Back to Basics

Product management and project management — Two functions, two vital roles

by Steven Haines, CEO, Sequent Learning Networks (sjhaines@sequentlearning.com)

New Product Development (NPD) is a field that is constantly expanding when people move up the corporate ladder into the function. To assist newcomers, Visions is inaugurating a new column that covers the basics of the NPD field. In the first offering, Steven Haines explains why the terms "product management" and "project management" are so frequently confused, even though they refer to two different functions.



Steven Haines
Sequent Learning Networks

For the past few years, the business world has suffered from "growing pains" and the corporate community is certainly enduring its share of turbulence and disorder. Among the many causative issues, mergers and downsizing are creating conflicts over strategies, roles and responsibilities, and corporate culture clashes. The current shift to outsourcing of important business functions like Product Development (PD) and customer service is another area of concern.

To bring some order to this organizational chaos, we will explore the vital roles of two of the most critical business functions that, in the words of Rodney Dangerfield, "get no respect." These essential fields are *Product Management and Project Management.*

In most organizations, these functions are symbiotic, yet their purposes are distinctly individual and different. Moreover, the perceptions of those who fill roles in these areas are often confused about goals, methods, and responsibilities. Even the terms "product management" and "project management" are used interchangeably despite their discrete purposes.

How They Interrelate

In this article, we will describe how each function should operate within the framework of the organization. Then we will compare and contrast them so that you will have a clearer idea of what each job involves, where it fits, who performs each job, how they interrelate, and why every one of these jobs is important to the success of the firm.

That said, we need a set of definitions to work with to clarify the terminology. First we will describe the terms *product* and *project;* then we'll define the differing roles of Project Manager and Product Manager.

A *product* is any tangible or intangible item or service, bundle, or bundles of goods and services offered for sale. Products have a life cycle. They are conceived, developed, introduced to and managed in the market, over a period of time.

A *project* is a series of activities and tasks which contribute to the creation or support of a product or service. Projects are organized within a systematic framework, utilizing appointed or allocated resources. The tasks are subject to dependencies, such as the performance of others and risks that can go wrong.

Project manager professionals may refer to a collection of related projects with the term "program management." For instance, if there's a product under development and there are three separate projects, those three may be perceived as one program.

The delivery of a *product* (or group of products in the case of program management) signals the conclusion of these project activities and tasks. Projects also have a life cycle. They have a start point and an end point.

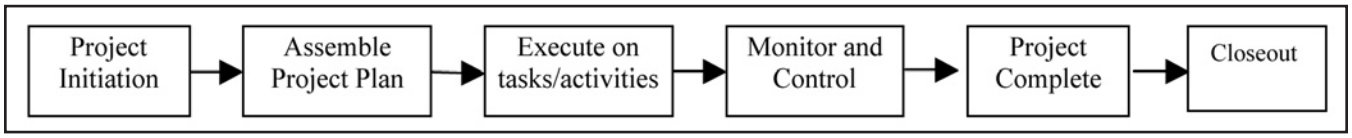
"Mini-business" Owners

Product managers are individuals appointed to be product or product line "mini-business" owners. They are the leaders of cross-functional product teams. These teams are formed to optimize the product's market position and financial return over its life cycle, and their performance should be consistent with division and corporate strategies.

Project managers are individuals responsible for planning, monitoring, and controlling all aspects of a project. They must motivate and synchronize the assigned resources to achieve the goals of the project, while coping with the constraints of time, cost, and consistent quality. Project managers manage projects from start to finish.

Here is the most important distinction between *products* and *projects*. *Products* represent the essence of the business – how it thrives, grows, and brings revenue to the firm. *Projects* are the vehicles used to derive, deliver, and support products, and any other business elements related to them.

Exhibit 1: Typical Project Life Cycle



SOURCE: Sequent Learning Systems

Project Life Cycles

For example, take a bank's new credit card offering. The credit card is the *product.* However, in order to get into the credit card business, several *projects* have to be undertaken. All projects use a standard methodology, which includes project initiation, project planning, the execution of work, monitoring of performance against the plan, and project completion or closeout. A typical *project life cycle* appears in Exhibit 1 on this page. These steps are shown below and then diagramed for greater clarity.

Product Life Cycles

The steps in a product life cycle are different, although products are managed using a

fairly systematic methodology, similar to that of project management. A typical *product life cycle* looks like the chart in Exhibit 2 on this page. Here is a more detailed description of that process:

- The product is conceived from a series of ideas that originate from market or customer observations, competitive activities, customer suggestions, or new technology or market ideas
- Many product ideas are then screened so that the firm can select the product or new product projects that fulfill the goals of the firm
- Selected products or product projects are developed
- Developed products are introduced to the market

Once the products are introduced, they are managed to optimize their overall performance, with attention paid to pricing, product content, packaging and design, advertising and promotion, distribution channels, etc. As products move through their life cycles, new product ideas emerge, new market opportunities are uncovered; and thus, the cycle starts again.

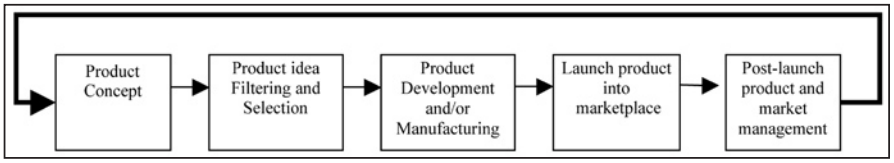
Project manager

All individual projects should have a project manager. All the projects performed on behalf of the product such as development projects, research projects, launch projects, et. al. and are the responsibility of a product team. Some companies may actually have a separate program office where project resources are managed. However, in the final analysis, the product team, led by the product manager, is responsible for the financial and market performance of the product. In some instances, the product manager can actually wear more than one hat and be the project manager for several of the projects undertaken for the product team. In order to put this into some perspective, take a look at Exhibit 3 on this page.

Field of Product Management

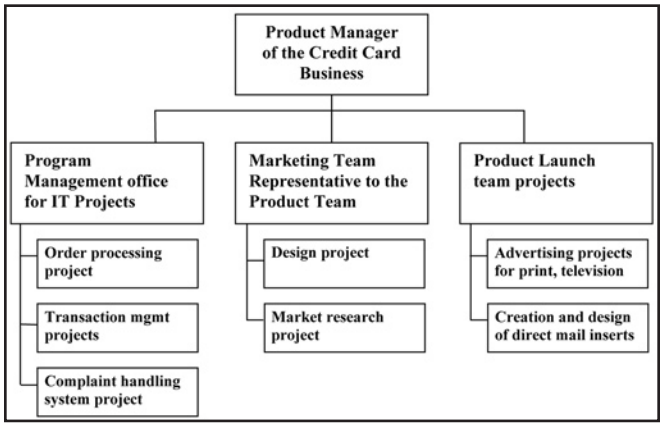
The actual practice of product management is interpreted in diverse ways across organizations, often the result of the functional orientation of the people who are in charge of the firm's products, brands, or categories. Why the disparity? One reason is that there is very little of the product management body of knowledge taught by institutions of higher learning. Another is that too often there are no standard internal product management training programs inside corporations. Universities teach core business functions like marketing, engineering, accounting, etc., but few if any include product management in their core course offerings. Therefore, product managers are usually "home-grown" and originate from those core functions such as marketing, product development, finance, etc. Few certifications exist for product managers. One is offered by the Association of International Product Management and Marketing (*www.AIPMM.com*); the other is from the Product Development and Management Association (*www.pdma.org*). The total number of certified practitioners from these two organizations is less than 1,000 worldwide.

Exhibit 2: Typical Project Life Cycle



SOURCE: Sequent Learning Systems

Exhibit 3: Multiple Responsibilities of Product Managers



SOURCE: Sequent Learning Systems

On the other hand, project management has a standard Project Management Body of Knowledge (PMBOK®) from the Project Management Institute (PMI). Their web site contains the following definition: "The 'Project Management Body of Knowledge' is an inclusive term that describes the sum of knowledge within the profession of project management." A unified body of knowledge means that an organization can be assured that if they employ certificated project managers who have completed specific training, those project managers will have the skills to manage projects according to a standard methodology.

Common Realities

Product managers and project managers share some common challenges. In most organizations, resources need to be secured from various business functions with agendas of their own. Functional organizations that are not aligned with corporate or divisional strategies may fail to commit those important resources, therefore jeopardizing product and project goals. Or when team members are provided, they often have other responsibilities. Since many people are reluctant to "push back" for fear of confrontation or retaliation, team members may over-commit, and then under-deliver. This, in turn, exposes the projects and product programs to risks which could include the missing of a market window or a specific customer commitment.

Common Characteristics

Product managers and project managers also share some common characteristics. They all need to have excellent organizational and interpersonal skills. They need to be relentless and persistent in the drive to achieve their teams' goals. Further, they need to possess qualities of leadership. Teams don't just "rally 'round the cause;" they rally around the vitality and inspiration of the person who represents the cause. Finally, they need appropriate systems and tools so that data can be synchronized across the business to offer visibility into the performance of projects, effectiveness of resources, and the consequent success of the products and services of the firm.

Relationship Between Them

Product management is re-emerging as a critical business function. Project management remains an important underpinning. If products represent the lifeblood of the firm, projects represent the skeletal structure. Both functions work in harmony in a cross-functional environment as they fulfill the goals of the organization. It is the responsibility of every member of the organization to understand these roles and how vital they are to the survival of the business in fiercely competitive, ever-changing markets.

Steven Haines is the CEO of Sequent Learning Networks,, a New York City-based training company focused on improving the capabilities of those who manage products and services.

Conference Report

PDMA 2005 International Conference provides participants with jazzy innovations and useful information

by Phillip Clark, NPDP, Business Planning for NPD (Clark.npdp@comcast.net)

Once again, our writer Phil Clark provides readers with an insightful look at PDMA's annual International Conference. This year's conference, held in Chicago from October 23 through 27, 2004, was particularly innovative and responsive to trends and developments in the Product Development (PD) field.

In a bold innovative move, the Product Development & Management Association (PDMA) used a jazz presentation for its opening keynote session at PDMA 2004—its 28th annual International Conference held in Chicago, October 23 through 27. The aim of the unusual keynote address was to break attendees out of conventional mindsets, and get everyone ready to learn new principles of New Product Development.

"Chicago is the land of jazz," Conference Chair Hamsa Thota told the audience of as he welcomed participants and introduced Michael Gold, who led the presentation entitled, "Jazz Impact: The Behaviors of Jazz and the Artistry of Process." The presentation consisted of an artful mix of live jazz classics—played by an ensemble on stage—complemented with overhead slides. Through music and words, Michael showed us how both jazz and successful development processes are a living process of collaborative responses to change. He ended the presentation with the words of Charles Darwin, "It is not the strongest of species that survives, nor the most intelligent, but the one most responsive to change," which resulted in a standing ovation from the audience.

This opening keynote was not the only innovative feature of the conference. It also included a live video feed from California and track material that broke new ground by focusing on Implementation.

International audience

With more than 630 attendees, the conference audience was made up of a healthy mix of practitioners, service providers, and academics. Again, this year, the international appeal of ideas presented was emphasized by the presence of attendees from such countries as Australia, Belgium, Brazil, Japan, Korea, Mexico, Singapore, and Taiwan. This striking mix of attendees was presented with more than the "usual suspects."

The conference itself was built around three tracks, connected to PDMA's new online PDMA *Body of Knowledge*—Discovery, Development and Commercialization. These tracks provided attendees with the kind of reliable and informative sessions people come to expect from the conference. The Academic Conference, organized by Al Page of the University of Illinois, Chicago, played its traditional role as a lead event. The conference was followed by the traditional workshops, organized by Anne Orban, Director, Discovery & Innovation at Innovation Focus, Inc. The old reliables were there, but so were some surprises.

New for 2004

The conference committee added some new features to this year's conference, including a CEO Roundtable sponsored by Microsoft and Kellogg Innovation Network, a panel of Product Lifecycle Management (PLM) industry analysts sponsored by Artemis, a presentation on the results of the recently completed Comparative Performance Assessment study conducted by the PDMA Foundation in 2004, and a live video feed from California of Geoffrey Moore.

Phillip Clark
Business Planning for NPD

CEO Roundtable

The CEO Roundtable was expertly moderated by Mark Davis, a principal with Deloitte. The guest CEOs were presented with a series of questions that brought some constructive insights from these highly successful executives. Participating in the event were Sandra Beach Lin, President of Alcoa Closure Systems International; Dave Rolls, CEO, The Chamberlain Group; Mindy Meads, CEO and President of Land's End; and George Buckley,

Michael Gold, Ph.D. of Jazz Impact mixed live jazz and an overhead slide presentation in his kick-off speech emphasizing the parallel between jazz and innovation.

Mark Davis chaired a CEO panel on NPD. (Left to right) Mark Davis, principal, Deloitte Consulting; Sandra Beach Linn, president, Alcoa Closure Systems International; George Buckley, chairman and CEO, Brunswick; Mindy Meads, CEO and president, Lands' End; David Rolls, CEO, The Chamberlain Group.

Chairman and CEO of Brunswick Corporation. Some of their insights are given in the box on this page.

Analyst Panel

Michael McGrath, co-founder and managing director of PRTM, took the role of moderator for this erudite and informative panel of PLM industry analysts. Contributing their insights were Navi Radjou, Vice President of Forrester Research; Marc Halpern, Research Director of Gartner Research; Kevin O'Marah, Vice President of Research at AMR Research; and Bruce Hudson, Program Director at META Group. The presence of this group underscores the fact that New Product Development and Product Lifecycle Management activities are gaining a much higher profile in today's business world.

CPAS Report

Attendees were also treated to an in-depth presentation of the findings of the PDMA Foundation's Comparative Performance Assessment Study (CPAS). Results of the survey, covered in less detail in an article in the October 2004 issue of *Visions,* were presented by Marjorie Adams-Bigelow, Project Director. Ms Adams-Bigelow explained that once the study was completed, she worked with individual corporations to help them benchmark themselves against the study to see how they compare to "the best" in the group—and to identify areas that could be improved.

Lifetime Achievement Award

PDMA gave the "Lifetime Achievement Award" at the conference to Michael McGrath. He was the first recipient of this new award, which is second only to PDMA's prestigious Crawford Fellow award. The new award is given for sustained and varied contributions to the PDMA or the profession over a period of at least 10 years. Michael has established himself as a visionary in the field of NPD and has contributed to shaping the direction of the profession through his work at PRTM, along with the many papers and books he has written. He has supported the PDMA for many years and expanded his support by encouraging volunteers from the PRTM organization. PDMA's growth and reputation have benefited greatly from Michael's long term commitment and belief in the PDMA mission.

Keynote Sessions

After the jazz keynote and several awards, Steve Segal, Chief Information Officer of Loewen, delivered the second keynote—"Loewen PLM–Enabling Customer Innovation." Loewen is a leading manufacturer of Douglas Fir windows and doors for North American and select international markets, and has the ability to deliver 9.3 trillion (yes with a "t") combinations of features on their window product line. Steve's main theme was that Product Lifecycle Management (PLM) systems are on the enterprise resource planning (ERP) scale, have the capacity to have a profound impact on competitive positioning, and should be implemented that way. Steve stated the traditional view would not deliver the competitive advantage Loewen was looking for. Since all business information systems revolve around a common data set that defines the product, Loewen's approach was to view a PLM system as the foundation data set that fed various other systems. By using this approach to guide system design and implementation, Loewen was able to put more product design decisions in the hands of customers and take advantage of their innovative thinking.

Geoffrey Moore

Monday's keynote session, sponsored by IDe, was provided by the well-know business writer and consultant Geoffrey Moore, Chairman and Founder of the Chasm Group. Goeffrey's two books—*Crossing the Chasm* and *Inside the Tornado*—have had considerable impact on the business community, and his concepts are found in almost every discussion of business world

CEO Roundtable Insights

Responses from this exceptional group of senior executives to questions presented by the moderator emphasized some basic truths of our field.

What is the role of CEO in product development processes?

Hire the right people for each phase of the process. *Mindy Meads*

He must always be the manager of a creative environment. *George Buckley*

How do you fund innovation?

The two most important concepts a CEO must manage are innovation and cost. *George Buckley*

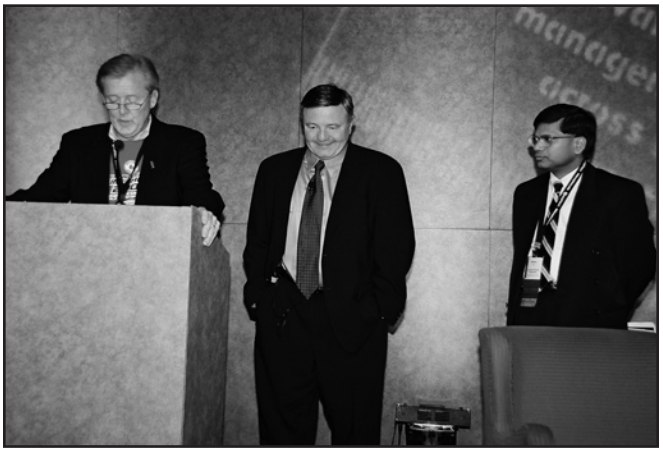
What advice would you give to our audience?

Don't be parochial. Build relationships with others in the company and the market to get their help in getting the product out. *Dave Rolls*

If you want to succeed, keep your planning timelines. *Mindy Meads*

Use your innovative process to enhance and strengthen your brand. *George Buckley*

Michael McGrath chaired an analyst panel on NPD and IT. (Left to right), Michael McGrath, co-founder and managing director, PRTM; Kevin O'Marah, vice president of research, AMR Research; Navi Radjou, vice president, Forrester Research; Bruce Hudson, program director, META Group; and Marc Halpern, P.E., Ph.D., research director, Gartner Research.



Bob Gill, former PDMA President, (left) announces PDMA's first "Lifetime Achievement Award" which went to Michael McGrath, co-founder and managing partner of PRTM (center). Hamsa Thota, PDMA President-Elect 2006 (right).

innovation. His presentation, a live video cast from his offices in San Francisco, was titled, "The Two Towers–Complex Systems, Volume Operations, and Product Life-Cycle Management." Essentially, Goeffrey has expanded his conceptual view of the technology adoption lifecycle, and the role and impact of innovation in that space, to the market maturity lifecycle. The foundation of his presentation was that innovation covers a broad spectrum: disruptive innovations move stock prices; growth innovations move market shares; continuous innovations move margins; and renovating innovations extend franchises. Different types of innovation are rewarded at different times and a portfolio approach is required. Goeffrey went on to explain how complex systems vary from volume operations, how companies tend to be one or the other, and how each drives the use of innovation and the customer relationship. If you are a business theory junkie, it was heady stuff. While the technology had a few hiccups, the audience felt the key concepts of his presentation came though clearly and were excited about the new tools for business analysis received in the session.

Research Forum report

The Research Forum, held on Saturday and Sunday before the beginning of general sessions, was chaired by Al Page, Professor of Marketing, University of Illinois, Chicago. One hundred six professionals eager to learn about leading-edge research on issues of importance to NPD and PLM professionals attended the Forum. The PDMA Research Forum at the International Conference is one of the best places to hear about new research results on issues key to success in New Product Development and lifecycle management processes. Under normal publishing time frames, audiences might have to wait months, if not years, to learn about new results in the field. The Research Forum also makes the authors more accessible to non scholars to clarify some of their research. The authors appreciate the opportunity to present at the conference because of the immediate feedback they get on their work and the value it might have. One attendee, commenting on the value of the research forum, said, "This forum just really gets me going. As a marketing professional and doctoral candidate myself, the Research Forum has exceeded my expectations to improve my knowledge in the field of New Product Development."[1] Presentations on research projects were made by dissertation award winners from 2002 and 2003. The Research Forum award winners were Rajesh Sethi and Anju Sethi of Clarkson University who received the Best Research Forum Paper award for their paper, "New Product Innovativeness: Encouraging Risk Taking or Quality Orientation?" Mike McCardle of Western Michigan University earned the 2004 PDMA Doctoral Dissertation Award for his dissertation proposal on "Market Foresight Capability Determinants and New Product Outcomes."

Hold the dates!

PDMA 2005 International Conference

Innovation in Global Product Development
"Driving Sustainable Growth and Productivity across the Value Chain"

October 22 - 26, 2005 San Diego, California

For Exhibitor and sponsor information, please contact David Mleczko. 203 431 8950 x 603. dmleczko@globalexec.com.
Check www.pdma.org/2005 for program updates.

PDMA Body of Knowledge goes public

PDMA announced the availability of the new online PDMA *Body of Knowledge (BOK)* to the general public at the conference. While many PDMA members are already familiar with the concept from previous articles, access to the top layers of the *PDMA-BOK* is now offered to nonmembers. The PDMA Board of Directors identified achieving consensus by the profession on a core body of knowledge as a crucial part of the evolution of Product Development and Management toward a professional status. The *PDMA-BOK* is a key part of that effort.

The *PDMA-BOK* is both a conceptual construct and a knowledge access tool that organizes New Product Development and Product Lifecycle Management knowledge. It organizes NPD and PLM activities into three main phases and then divides these phases into six major knowledge areas. Access to this content is provided via a web site maintained by PDMA. The *PDMA-BOK* organizes, distills, and provides ready access to the continuously evolving core knowledge needed and used by Product Development and Management professionals and their organizations. The *Body of Knowledge* will start with the basics and rapidly grow as the PDMA community at large adds to it.

Conference tracks reflect *BOK*

The conference tracks reflected the recently released and innovative *PDMA Body of Knowledge:* Discovery, Development, and Commercialization. Organizing the conference this way allowed attendees to focus on the phases of NPD and PLM knowledge that were most critical to them. The presentations within each track were also organized around the layers of knowledge whenever possible.

Discovery Track

Co-Chairs: Jay Radovich, D.Sc.—Senior Director, Engineering Transfusion Therapies

Division Baxter Healthcare Corporation; and Brenda L. Tollett—Vice President, Innovation The Valvoline Company

The *Discovery Track*, sponsored by SAP Corporation, covered all of the practices associated with the Discovery Phase: searching for, identifying, and selecting new opportunities whether market-based or technology-based. The Discovery Phase includes and ends with the articulation of business, customer, and product requirements that define the feature functionality sought. Co-chairs for this track identified the following highlights from the sessions:

- The Discovery Practices panel pointed out how important it is to get the right people assigned to the right project – that it takes certain skills to perform certain tasks related to innovation. The right people can make all the difference.
- A company can lose good opportunities if ideas are judged too early. Practice a philosophy in which "no idea is a bad idea."

Development Track

Co-Chairs: Bob Brentin, Consultant and 2005 PDMA President; and Joe Francis, Hewlett-Packard, Senior Director, IT BPM, Hewlett-Packard.

The *Development Track*, sponsored by ATKearney, was about the dark night of the innovator's soul, when the rush of innovation has worn off, and the glory of new sales has yet to be realized. The scientists have long since gone home, leaving you with a pile of wild ideas. The sales department is barking at the door, demanding the latest and greatest to satisfy the insatiable market. Many of the concepts, tools, and techniques that create a win in this area seem surprisingly simple; but the execution of these skills is maddeningly complex and fraught with sinkholes of effort. Some highlights of the sessions:

- Structured process for Product Development helps set planning expectations for decision makers.
- Risk management needs to be a part of the planning process.

Commercialization Track

Co-Chairs: Shayne Smith, Vice President Manufacturing, Wardrop, Inc.; and Mark Deck, Director, PRTM

The *Commercialization Track*, sponsored by Artemis, was about different functional perspectives on the "back end" of the life cycle, from product launch to growth, renewal, harvest, and exit. Companies face a multitude of complex issues in maximizing

Outstanding Corporate Innovator (OCI) 2004 Awards

PDMA honored two organizations at PDMA 04 as winners of the 2004 Outstanding Corporate Innovator (OCI) award—Affymetrix, Inc. and the Air Force Research Laboratory (AFRL). Stan Jankowski, PDMA OCI Committee Chair, introduced Chuck Salter, Senior Writer for *Fast Company* magazine, sponsor of the award. *Fast Company* is a nine-year-old monthly magazine that seeks to understand and chronicle the ever-changing world of work. This is the second year *Fast Company* has sponsored this award. Salter commented that "Innovation is in our DNA at the magazine. From the beginning, we have been celebrating and dissecting the most interesting and ambitious examples we could find. Speaking for my colleagues at *Fast Company*, let me just say we're delighted to be here, to participate in these awards, and to honor the innovative work at Affymetrix and the Air Force Research Lab."

Accepting for Affymetrix was Dr. Grace Colon, Vice President for Corporate Planning; and Dr. Trevor Nicholls, Executive VP Product Development and Marketing. Affymetrix was selected on the basis of its success in pioneering and commercializing breakthrough tools, which are helping drive the global genomic revolution. The selection committee considered it truly impressive that Affymetrix has achieved a corporate wide 'buy-in' into the need for focus, discipline, and a "total solutions" approach toward successful Product Development. Affymetrix combines semiconductor technology with the leading edge of life sciences; and, in doing so, has brought enabling technology to the market in support of scientists' efforts to improve quality of life by understanding the relationship between genes and human health.

Representing the Air Force Research Lab in accepting its award was Mick Hitchcock, Les McFawn, and Brigadier General David L. Stringer. The Air Force Research Lab (AFRL) has traditionally provided successful technology solutions to the Air Force's air, space, weapons, information, and maintenance systems. Despite past successes and in response to Air Force senior leadership goals to field technology faster and more affordably, the Air Force Research Lab undertook a remarkable transformation of its New Product Development efforts. AFRL radically reengineered its development process from one that focused on advancing individual technology disciplines, to one focusing on adding value directly to a broad customer base. Implementing the new process meant overcoming numerous organizational barriers that are typical in a highly structured environment like the military. Total end use requirements, including manufacturability and serviceability, receive much more attention as a result of the transformation. "Technology Roadmaps" and "Capability Planning" sub-processes are used to fuel ideation, capture needs, and synchronize developments/deployment schedules.

2004 OCI winners accept their awards: (Left to right) OCI Selection Committee: Stan Jankowski, President N.O.V.A. Consulting LLC & Committee Chair; Sally E. Kay, Principal, Strategic Product Development; and Al Page, Professor of Marketing, University of Illinois at Chicago. Affymetrix: Trevor Nichols, Executive Vice President of Product Development and Marketing; Grace Colon, Vice President, Corporate Planning; Air Force Research Laboratory: Michael Hitchcock, Deputy Director, Les McFawn, Executive Director, and Brigadier General David L. Stringer, Commander, Arnold Engineering Development Center, United States Air Force. Also shown, Chuck Salter, Senior Writer, FastCompany, *and Chris Miller, PDMA President 2004.*

Cover Story/2004 OCI Co-Winner

Affymetrix, a leader in the genomics revolution, uses a new product development process to improve productivity

by Dr. Grace Colón, Vice President, Corporate Planning, Affymetrix, Inc. (grace_colon@affymetrix.com)

Affymetrix, a genomics company, was selected as one of the 2004 Outstanding Corporate Innovator (OCI) award winners by PDMA based on its success in pioneering and commercializing GeneChip® microarrays. In this article, Grace Colon explains the company's NPD process and the role it is playing in Product Development at the company.

Grace Colòn
Affymetrix, Inc.

The GeneChip® microarray was invented by Stephen P.A. Fodor and colleagues in 1989. Affymetrix was established in 1992 to commercialize the invention. Each microarray is a small piece of glass—about the size of a dime—that contains millions of DNA strands attached to the surface. Those DNA strands are used to measure gene expression levels and DNA sequence variation across a complete genome. Scientists use GeneChip® arrays for diverse applications, including disease research, drug discovery and development, clinical diagnostics, and numerous industrial applications, such as food and water testing.

Along with each array, researchers use standardized protocols, reagents, instrumentation, software, and annotations (or information that is known about a specific gene or pathway) to analyze the results of an experiment. All of these components make up a whole product solution, which is required to obtain high quality results.

Seven generations of technology

GeneChip® arrays are manufactured through a scalable process that marries semiconductor fabrication techniques with biotechnology to create a new product and a more useful research tool. Since the mid-1990s, over seven generations of the technology have been launched, each capable of accommodating more genetic information than the previous one. With each new generation, the entire system (arrays, instruments, software, reagents) needs to be optimized to ensure performance.

Overcoming Product Development challenges

The company culture of Affymetrix is rooted in technology innovation. By investing heavily in R&D and recruiting a talented group of researchers, Affymetrix continues to develop its intellectual capital, resulting in groundbreaking products and the creation of new markets. However, the strong values placed on scientific research made for a highly academic environment, where "project management" and "processes" were viewed as bureaucratic and cumbersome. As the company grew and began to focus on consistent profitability, the need for more predictable schedules, costs, and returns quickly became obvious. The challenge was to create a culture of solid execution without sacrificing innovation.

What are GeneChip® microarrays?

Scientists use GeneChip® microarrays to interpret sequence (DNA) and gene expression (RNA) information into practical information about health, disease, and living organisms in general. A sample of tissue such as blood can be taken from an individual suffering from a disease, and the DNA or levels of RNA can be compared to those from a healthy individual. The sample is placed on the microarray and the amount of RNA from tens of thousands of different genes can be measured at once. Alternatively, DNA can be measured and locations where the DNA differs can be compared. In this way, scientists can find genes or groups of genes that are linked to a disease or condition. Examples of some microarray applications are given in the box on page 29.—*The author.*

the return on their NPD investment. Some track highlights:

- Managing the back end is greatly improved by planning for it in the front end.
- Consider being your own "fast follower." Working with a co-development partner or a separately resourced internal project team provides the ability to react to disruptive requests from large customers.

PDMA Annual Meeting

Continuing its effort to use the international conference as an opportunity to build unity in the PDMA membership, the second annual members' meeting was held during the conference. Chris Miller, the 2004 PDMA President, hosted the meeting, which was attended by close to 80 enthusiastic members. Among the highlights announced at the meeting was the fact that membership grew to 2300 members in 2004, with membership made up of 1400 practitioners, 400 service providers, 300 academics, and the remaining members unclassified. Forty-eight states and 43 countries are represented by this membership.

V.P. for Academic affairs, Peter Koen, announced that PDMA has restarted the sponsored research competition. This coming year—2005—PDMA will be funding four research proposals at $2,500 each and the association has plans to do the same the year after. The PDMA Academic committee has set an objective to increase the net funding level to between $250,000-$500,000, including externally sourced funds. The goal is to fund relevant industry initiatives that would help to increase U.S. competitiveness by improving the innovation

In 2002, Affymetrix developed the Advanced Product Life-Cycle (APL) program, an integrated process for prioritizing, planning, and executing the development and on-time delivery of competitive, customer-driven products. The process is based on management consulting firm PRTM's Product and Cycle-time Excellence® (PACE®) product development framework. It was tailored to meet Affymetrix's unique needs. These needs include flexibility, efficiency, system integration, and the ability to motivate, focus, and engage a group of highly talented and creative people.

The hallmarks of APL include:

- A structured development process with flexible guidelines to meet the needs of different types of products and customer solutions.
- Small, cross-functional core teams with clearly defined responsibility and authority for each core team member, ensuring ownership for each component of the whole product solution as well as for system integration.
- A phase review process that is event-driven and guided by contracts between the team and the approval committee; each phase has either a clear business or technical focus.
- A cross-functional Product Approval Committee with clearly defined decision makers, effective resource allocation and management, and a focus on delivering the overall product portfolio in a manner consistent with company strategy.

The successful implementation of APL has been a key factor in the launch of breakthrough products during the last two years. The company has achieved a significant decrease in slip rates, cost variance, and complaint rates. At the same time, markedly increased pipeline throughput has resulted in a substantial percentage of sales originating from recently launched products.

The Front End

The success of Affymetrix's product development processes lies in our markets, our technology, and our people. We work with leading edge investigators and thought leaders in academia, government, and industry to access, leverage, and build on the tremendous amount of information generated through the Human Genome Project. We have worked very closely with these customers to drive cutting-edge research and to provide a robust customer solution. Through Early Access programs for technology and products, we provide customers with access to early versions of the products, at times with only part of the whole solution. In this way, we capture early customer feedback; whet the appetites of the thought leaders; generate early awareness through publications, conferences, and "buzz;" and prepare the market for the technology.

Another critical factor in our success was the establishment of Affymetrix Laboratories, a group modeled after institutions like Bell Labs. Affymetrix Labs receives a fixed amount of funding from the company, with additional funding generated through grants. The group is managed separately from Product Development and is strictly focused on research and early technology development. This move creates a strong innovation engine that is maintained regardless of commercialization priorities. The Affymetrix Labs personnel work closely with the Product Development group to implement newly developed technologies and to provide independent review of feasibility and development milestones.

Genechip® Microarrays: The Affymetrix Product

Here are some applications of microarrays:

- Understanding the molecular basis of disease
- Cancer predisposition, prognosis, diagnosis, and treatment determination
- Personalized medicine
- Human diagnostics
- Food testing
- Livestock breeding
- Agricultural biotech
- Identity testing (forensics, paternity)
- Environmental testing

AFFYMETRIX®

SOURCE: Affymetrix

The way ahead

Critical to the success of the APL process has been the commitment of the entire organization, including senior management, and a mindset that encourages flexibility and new ideas. The process was built to be malleable, to easily incorporate "lessons learned," and to adapt to the evolving needs of our customers.

Going forward, we will continue to build on this success by focusing on the implementation of best practice portfolio management, including management of co-development relationships.

By combining its revolutionary GeneChip® microarray technology with a disciplined corporate-wide approach to New Product Development, Affymetrix' products have helped increase scientists' understanding of the relationship between genes and human health, fueling innovative science and paving the way toward a new health care paradigm.

Dr. Grace Colón is Vice President, Corporate Planning at Affymetrix in Santa Clara, California.

academic discipline. Other major news was that the association will be establishing a senior position responsible for managing membership growth programs. Wrapping up the meeting, Chris Miller introduced the 2005 PDMA President, Bob Brentin.

Chapter Presidents Meeting

Rich Notargiacomo, V.P. Chapter Development, ran the traditional PDMA Chapter Presidents Meeting, which preceded the main conference. The underlying theme of many of the issues raised at the Chapter Presidents Meeting seemed to be the need for continued improvement in delivery of value from PDMA-national at the chapter level. PDMA has already increased its organizational support for the chapters. This could be seen by the active participation of PDMA past President Bob Gill, current President Chris Miller, and incoming President Bob Brentin in the Chapter Presidents Meeting.

The meeting gave the 14 chapter presidents or representatives, who attended out of the total of 19 chapters in the U.S., an opportunity to express their concerns about how they work with the national organization. Attendees considered how PDMA can help the chapters achieve joint goals; and, in an overall sense, build a better relationship. The cooperative effort can have a direct impact on the quality of programs delivered at the chapter level and can help build PDMA membership.

OCI winners

PDMA announced the winners of the 2005 Outstanding Corporate Innovator (OCI) award at the conference—Affymetrix and the Air Force Research Laboratory (AFRL). Both organizations gave presentations about

their NPD process during the conference. See the box on page 27 for further details and an article by Affymetrix on pages 28 and 29.

A record number of sponsors and exhibitors participated in PDMA 2005, and the Exhibit Hall was more active than ever. Microsoft stepped in as a Premier Sponsor, hosting the CEO Roundtable and the conference reception, along with co-host Kellogg Innovation Network. All together, there were 48 sponsors and exhibitors supporting the 2004 conference. In a testament to the exploding importance of the field of New Product Development and Lifecycle Management, overall sponsorship/exhibitor support for this conference has grown from five sponsors providing $5,000 in support in 1999 to this year's record of $392,000.

Conference reception

The conference reception and exhibition kickoff on Monday offered a broad assortment of snacks, including Mexican frittatas, pizza, and a selection of soft drinks, beer, and wine —all complemented by the marvelous music of the opening keynote session jazz group. Especially engaging was the passion displayed by Michael Gold, our opening keynote speaker. His riffs on bass led the rest of his group into an energy level that captured the audience's attention. This was also an opportunity for friends and acquaintances, both old and new, to talk about the new ideas picked up in the day's sessions, which sessions they would be going to during the rest of the conference, and what ideas would be most useful at home. The reception also offered attendees an opportunity to see what was new from the conference sponsors and exhibitors in the reception area. Judging from the numerous people talking with the vendors and people staffing the booths, the reception was not only fun, but a great success for them as well. Motorola also hosted a special event—an evening cocktail party and a walk through its near-by Motorola Museum.

Workshops provide detailed knowledge

Judging from comments on the evaluation forms, the 134 people attending the pre- and post-conference workshops left with a great deal of legitimately career enhancing knowledge. As participant Rich Pollex commented, "This was my first PDMA conference. I was pleasantly surprised with the content to develop and improve best practices within our organization and for our clients." Glenda Wylie agreed saying, "I was very glad to attend Research Forum and workshop. I plan to apply the learnings at my company to increase profitability."

Huge success

As one participant put it, "My first PDMA Conference, but NOT the last!! Excellent!" Another said, "A wonderful opportunity for PD intro. I have more to learn, and I am now equipped with the resources."

Judging from these comments, PDMA 2004 was a huge success for participants, PDMA, and the organizing committee. Jazz broke us out of our boxes, Geoffrey Moore exposed us to new ideas in conceptualizing the way we view business cycles, the track sessions gave us new ideas on dealing with the day-to-day challenges of Product Lifecycle Management, and the networking sessions offered opportunities to link up with other professionals dealing with similar issues. All together, it was another invaluable opportunity to help NPD professionals develop and maintain a competitive edge—both for our employers and ourselves—whether our role is a practitioner, service provider, or academic.

If you would like to be part of this brilliant professional development opportunity next year, be sure to mark your calendar now for the 2005 PDMA International Conference. It will be held in the invigorating city of San Diego, California, October 22 – 26. The theme of the conference will be, "Innovation in Global Product Development – Driving Sustainable Growth and Productivity across the Value Chain."

Phillip Clark is principal of Business Planning for NPD.

PDMA ToolBook 3

Submit your proposal for the third PDMA ToolBook

Want to share your expertise with other Product Development (PD) experts? Submit your idea for a chapter for the third volume PDMA's ToolBook series—*ToolBook3*—now in preparation and expected to be launched in 2006. Prospective authors should be experienced New Product Development practitioners who are grounded in the basics of New Product Development and are seeking to share new, practical knowledge with others. Proposals are due by January 31.

The first two books in this series were created to complement PDMA's classic *Handbook of New Product*. The second edition of the *Handbook* came out in 2004.

The first two volumes of the *ToolBook* series had different emphases. The first, *ToolBook1*, provides tools for NPD project team leaders, NPD process owners, and NPD program or portfolio managers. *ToolBook2*, published in 2004, contains tools for better managing innovation organizations, improving the Fuzzy Front End of innovation, improving innovation process management, and planning and portfolio decision-making tools.

Each chapter of *ToolBook3* will provide thorough descriptions of different tools or techniques, which readers can then apply to their own development of new products and services within their own companies. *ToolBook3* will probably have from 10-16 chapters of approximately 30 pages each. A list of possible topics for this *ToolBook* can be found on the PDMA Web site at www.pdma.org/bookstore. Additional topic ideas are also welcome. The editors of the PDMA *ToolBook* series are Paul Belliveau, Abbie Griffin, and Steve Somermeyer.

Proposals should consist of a one-paragraph objective and target audience definition for the chapter, a one- to two-paragraph description of the tool or technique, and a one- to two-page outline for the chapter that covers its basic content. All chapters must contain examples of firms and/or projects that have successfully used the tool or technique, and an indication of how and why others can apply and expect to benefit from using it.

As with all PDMA activities, *ToolBook3* will adhere to the association's non-commercial policies. The author's professional affiliations are included in the by-line, but the chapter should not present any proprietary methods or techniques.

All authors must submit proposals and chapters electronically in attached files using Wintel platform, Microsoft Office '97 compatible software. The *ToolBook3* timeline is available on the PDMA Web site.

For additional information or to purchase the *ToolBook1*, *ToolBook 2* or the *Handbook*, see the PDMA web site: www.pdma.org/bookstore.

Please e-mail all chapter proposals to Abbie Griffin at abbieg@uiuc.edu by the end of January 2005.

From the Editor of JPIM

JPIM Announces a Special Double Issue: "Marketing Meets Design"

by Anthony Di Benedetto, Department of Marketing, Temple University (Anthony.dibenedetto@temple.edu)

Special Issues are an important part of the publishing objective of the *Journal of Product Innovation Management (JPIM)*. In a special issue, top new product researchers focus their efforts on high-priority product-related research topics that are emerging in importance or have remained relatively understudied through the years. They help to keep *JPIM* from being parochial. They ensure that our researchers and readers stay open to new, relevant ideas and research streams outside the established new product literature. At the same time as I am announcing no fewer than three new special issues on this page, I'm delighted to introduce the special issues of January and March 2005 *JPIM—Marketing Meets Design: Core Necessities for Successful New Product Development*, edited by Peter Lawrence and Leigh McAllister.

This double special issue was initiated by the Corporate Design Foundation (CDF) and the Marketing Science Institute (MSI). Sara Beckman of the Haas Business School and CDF suggested that a special issue of a business journal on the role of design in business success was overdue. Abbie Griffin, editor of *JPIM* at the time, agreed and gave the go-ahead to the special issue editors.

MSI is currently listing "creating a culture of innovation" as a priority research topic, which clearly is of interest to *JPIM* readership. In 2003, the University of Michigan and MSI co-sponsored a "Marketing Meets Design" conference that brought together speakers, such as Sam Faber of OXO Kitchen Tools, Claudia Kotchka of Procter & Gamble, and Philip Thompson of Whirlpool, all of whom addressed the strategic importance of design in their new Product Development processes. The special issue editors, Peter Lawrence of CDF and Leigh McAllister of MSI, argue that design is one of the ways by which a firm can create and sustain a culture of innovation.

The articles appearing in these two issues of *JPIM* are representative of the cross-functional and global nature of design's impact. They were written by marketers, industrial designers, consumer researchers, accountants, and engineers located in many different parts of the world. Readers will also find a wide variety of research methodologies among the published papers. It is hoped that these articles clarify what has been a difficult issue to understand—the inputs of design in New Product Development—and that these become the "go-to" issues for future research in the area of new product design.

Anthony Di Benedetto
Temple University

JPIM Announces Call for Papers for Three Special Issues—Globalization, Branding, and Teams

JPIM periodically sponsors special issues on emerging or under researched topics in NPD. I am delighted to announce three upcoming Special Issues. More information on specific topics for publication can be found in recent issues of *JPIM* or online at the PDMA site (www.pdma.org). The special issue editors listed below are your contact persons. Please think about submitting to these special issues! —Anthony DiBenedetto, Editor, *JPIM*

Effective Global Product Innovation and Launch

The main objective of this global issue of *JPIM* will be to advance our understanding of global product innovation and launch, potentially for both individual products and product lines/ platforms at corporate, business unit, and alliance levels. The issue will focus on the challenge of developing and launching products quickly, on a global basis, while staying ahead of the competition and achieving rapid market penetration. Such challenges have firms searching for new ways of addressing these issues.
Editors: Roger J. Calantone and David A. Griffith, Michigan State University.
Deadline: July 31, 2005
Submission: By e-mail to Prof. Roger J. Calantone: rogercal@bus.msu.edu.

Branding and New Product Development.

The main objective of the branding issue of *JPIM* will be to advance our understanding of the role of branding in the NPD process. Although very few people would doubt the important role of branding in NPD, little research has been conducted on the topic; and *JPIM* has carried very few empirical papers on this topic in the past 20 years. This is surprising because, on one hand, successful new products build strong brands; on the other hand, good branding decisions improve the success chances of new products. This topic will benefit from a larger body of literature.
The Editor: Erik Jan Hultink, Professor of New Product Marketing and Director of the Master Program in Strategic Product Design, Delft University of Technology
Deadline: August 31, 2005
Submissions: By e-mail to Prof. Erik Jan Hultink: e.j.hultink@io.tudelft.nl.

Teams and New Product Development

The purpose of this special team issue of *JPIM* will be to provide a forum for articles exploring the importance of teams in New Product Development (NPD). There has been a dramatic rise in the use of teams in NPD in the 25 years. However, much of the past and current attention has focused on more traditional issues related to intra-team communication, conflict and trust; team design and diversity, leadership, etc. This issue will explore new areas relating to teams in NPD.
Editor: Shikhar Sarin, Department of Marketing and Finance, Boise State University, Boise, ID.
Deadline: September 30, 2005
Submission: By e-mail to Shikhar Sarin at ssarin@boisestate.edu.

New Yellow Pages

PDMA launches *Yellow Pages* on web site; Buyers and sellers are already connecting

by David Olson, PDMA Webmaster (webmaster@pdma.org)

Nearly 100 companies are already listed in PDMA's online Yellow Pages *section, which was launched in October 2004. PDMA webmaster David Olson describes what led to the creation of these* Yellow Pages *and how they can be of value to Product Development professionals and service providers.*

PDMA receives e-mails virtually every week from new product professionals looking for product advice or vendors trying to reach their customers. Here are some examples:

"I'm a product manager, and I'm looking for software to help guide the product development process at my company. Do you have any suggestions on where I might look?"

"My company has designed a line of software to help companies with their internal processes relating to product development. How can PDMA help me reach my potential customers?"

Sample Page from New PDMA Yellow Pages

Until recently, there were not many ways we could help these colleagues. PDMA offered buyers and sellers few options. We offered ads in *Visions*, opportunities to exhibit at PDMA conferences and events, or the chance to become a full PDMA corporate sponsor. All those options provided ways for consultants or companies to make their products and services known to those who are actively shopping for such services.

Now things have changed. In addition to the options above, starting October 2004, we have launched the new *PDMA Yellow Pages*—a great way for Product Development and Management buyers and sellers to find each other—and do business.

And here is the best part for PDMA members: Members receive a free *Yellow Page* listing by logging on to the *Yellow Pages* area with their User Name and Password, and posting their ad there (all ad postings are "do-it-yourself"). There are three types of listings from which to choose, including the free one. Each remains posted for one year.

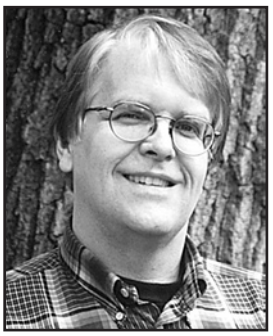
Standard Listing—Company name, phone, e-mail address, plus a 15-word text description. This standard listing costs non-members $30 a year. But PDMA members receive a Standard Listing FREE with their membership!

Gold listing—The same as Standard Listing, plus a web site URL, a 30-word text description, and a corporate logo ($75 per year).

Platinum Listing—Same as Gold, plus a 50-word text description, a large corporate logo, plus a full-page stand-alone Web page with a large banner graphic, and a top listing in each category ($250 per year).

The *Yellow Pages* is divided into categories to make it easier for buyers to find the right resource, including such categories as:

- Tools and Software (Enterprise, PLM, Process Software, etc.)
- Product Design & Development Firms
- Specialized NPD Consulting (e.g., Particular Industries, Practice Areas, etc.)
- Marketing and Branding Specialists
- Market Research / "Voice of the Customer" Research
- Ideation, Futurism, and Culture Consulting
- Financial and Industry Analysts
- Corporate Training, Seminars, and Conferences
- Executive Recruiters / Employment Specialists



David Olson
PDMA Webmaster

If an advertiser doesn't feel the company product fits one of those categories, the advertiser may request creation of a new one.

If you are an individual consultant but do not yet have a web site presence of your own, consider buying a Platinum ad in our *Yellow Pages*. These full-page ads can contain unlimited text and can give you a place on the Web to point your potential clients.

Shopping for NPD services

If you are a potential buyer of commercial solutions, clearly the first place you should check is the PDMA *Yellow Pages*. It's the most efficient way to identify companies that offer the solutions you are seeking. With direct links to their web sites for Gold and Platinum ads, you should be able to very quickly identify a range of potential vendors. E-mail links allow you to contact those vendors to request more information or proposals.

Check out our *Yellow Pages*

Just go to www.pdma.org/yellowpages, and click on some of the categories… or as a PDMA member, post your own free standard listing there. Just click on "Advertise here." If you have any questions, suggestions, or problems, contact me at webmaster@pdma.org.

I would like to add one important note: PDMA does not sell its membership lists to marketers although we receive many requests for them. Our goal is to give our members access to commercial vendors who may be of help, while reducing unwanted sales solicitations as much as we can.

David Olson is PDMA Webmaster and President of David Olson Consulting located in Winnetka, IL.

News on Dissertation Proposals

McCardle wins 2004 dissertation proposal competition; Call for 2005 proposals

by Jeffrey B. Schmidt, PhD, PDMA Dissertation Competition Committee, University of Illinois at Urbana-Champaign (jbs@uiuc.edu)

Michael McCardle, a graduate student at the University of Central Florida, won PDMA's 2004 Dissertation Competition for his dissertation proposal, "Market Foresight Capability: Determinants and New Product Outcomes." His proposal was selected as the best proposal based on a double-blind review process orchestrated by PDMA.

Mike made a presentation on his proposal at the Academic Research Conference at PDMA's 2004 in Chicago where he received a plaque and a check.

Mike is currently a tenure-track assistant professor at Western Michigan University and can be reached at mike.mccardle@wmich.edu.

Roger Calantone of Michigan State University was chair of the 2004 Dissertation Competition. Peter Koen, PDMA V.P. of Academic Affairs, will chair the 2005 Dissertation Competition.

Call for 2005 Dissertation Proposals

PDMA has begun its call for doctoral dissertation proposals to compete for a research grant in 2005. Winners of the competition will receive a number of benefits. First and foremost, their work will get early exposure in the academic community when the winner makes a presentation in October 2005 at PDMA's 2005 International Conference, a condition of winning the competition. The conference also provides an excellent networking opportunity with both academics and practitioners who may elect to support the student's continuing research in some way. PDMA will also distribute the required completed dissertation to all interested PDMA members. The dissertation proposal is expected to lead to a completed dissertation.

Secondly, the winner will receive a cash award of $2,500 and additional benefits up to an estimated value of $2,500. Third, the winner will receive a two-year membership to the PDMA, which includes subscriptions to the *Journal of Product Innovation Management (JPIM)* and *Visions* magazine, PDMA's practitioner publication. Travel costs to the annual conference are also included.

As an added incentive for graduate students to participate, the names of all applicants, whose dissertation proposals have been accepted for review, will be published in *Visions* magazine, PDMA's quarterly practitioner magazine, along with the title of their dissertations. An online version of *Visions* is also available on the PDMA Web site (*www.pdma.org*).

Applicants may propose research on any aspect of product/service innovation, development, commercialization, or management. Dissertation proposals that cross functional lines, involve multiple research disciplines, or make significant advancements in our Product Development (PD) knowledge or research methods are particularly encouraged. The proposals must already have been approved by the student's committee and the applicant must append a letter from his/her committee chair or department head, confirming acceptance of the proposal.

Proposals will be evaluated in a double-blind review process by experts in Product Development. Reviewers will judge the proposals against traditional academic standards and criteria, as well as the feasibility of completion in a timely manner. The grant from the competition is intended to support the recipient's dissertation research. Thus only those dissertations that will *not* be completed prior to the October 2005 annual PDMA Conference should be submitted to the competition.

The aim of the dissertation competition is to foster academic research on innovation and New Product Development, and encourage close ties between the academic and corporate worlds. For further information, including a list of possible research topics (although other topics are welcome) and the required content of the proposal, please go to the PDMA Web site (www.pdma.org).

Proposals, along with a letter from the dissertation chair or department head, confirming acceptance of the proposal, must be received by Jeffrey B. Schmidt no later than May 1, 2005. For instructions on the correct submission format see the PDMA web site.

Jeff Schmidt
University of Illinois

Jeffrey B. Schmidt, PhD, PDMA Dissertation Competition Committee, Department of Business Administration, University of Illinois at Urbana-Champaign (jbs@uiuc.edu).

PDMA Calendar: February-March 2005

February 2
PDMA New York/New Jersey Chapter Meeting
Hampton Inn, Westchester, N.Y.
6:30 PM
NPDP Recertification: 2 PDHs
Meet the Author of: Next Generation Product Development (Product Management Thought Leaders Series). Speaker is Michael E. McGrath, Co-Founder of PRTM. Fees are: $30/$40/$20 for PDMA Member/Non-Member/Student. For more information go to www.pdma.org/nynj.

February 9
PDMA Washington, D.C. Chapter Meeting
Location and time TBA
Topic: "Leonardo's Laptop"
The speaker is Professor Ben Shneiderman. For more information check the Washington DC web site at www.pdma.org/dc.

February 10
PDMA Chicago Chapter Meeting
Location and Time TBA
At this meeting, the results of the 2004 CPAS study will be presented by Dr. Marjorie Adams. For more details check the Chicago chapter web site at www.chicagopdma.org.

February 10-11
NPDP Certification Preparation Workshop / Review - Georgia
Two Ravinia Center (Perimeter Area), Atlanta, Ga.
Revised and Improved! This expanded two-day workshop provides advanced information on the discipline of New Product Development. You will learn the fundamentals, terminology, best of breed practices, essential tools, and the methods to innovate in a timely and effective manner. The content is perfect for those who want to learn about New Product Development and those who want to get certified as a New Product Development Professional. Anyone involved in New Product Development will benefit from this program.
For a complete description of the seminar, its curriculum, and how to register please e-mail info@nplearning.com or call (678) 455-6281.

February 14
PDMA Great Lakes Chapter Meeting
GVSU University Club
Grand Rapids, Mich.
NPDP Recertification: 1 PDH
A special daytime Energy & NPD event hosted by Crystal Flash. More details coming soon. Fee is $15 (unless you bring two colleagues); students free (checks can be made out to Jeremy Buckingham). For more information contact Brian Green at (616) 654-3116 or brian_green@hermanmiller.com

Partial listing of events. Check the PDMA website at www.pdma.org for the full calendar.

February 16
PDMA Northern California Chapter Meeting
Location and time: TBA
11:30 AM - 1:30 PM
NPDP Recertification: 2 PDHs
Topic: "How to prepare and conduct Business Wargames to develop and test plans at all levels"
Speaker: Jay Kurtz, principal, KappaWest, www.kappawest.com.
Part 1 – An Introduction to Product Management Wargaming: To provide participants with an introduction to the concept, process, and selected tools of Business Wargaming, especially as it is used to support the planning and management of products, so that each can determine if/when it could be used in his or her environment.
Part 2 – Product Mini-wargame: Provide participants with an opportunity to experience the use of the product management wargaming process in a fictional but true-to-life situation. Participants will form four teams, one representing a company with a mid-life high tech product, the others playing the roles of its market and two of its competitors.
For more information, check the Northern California web site at www.norcalpdma.org

February 16
PDMA New York/New Jersey Chapter Meeting
Cornell Club, New York City, N.Y.
6:30 PM - 9:30 PM
NPDP Recertification: 3 PDHs
Topic: "Meet the Author: Managing Your Customers as Investments: Are You Spending More on Your Customers Than They Are Worth?" (Product Management Thought Leaders Series)
Speakers are authors Donald R. Lehmann and/or Sunil K. Gupta, professors of marketing at Columbia Business School. This fresh approach to the study of valuing customer relationships examines the cost to acquire, retain, and grow your customer base, just like a company or a stock, over the long term, and presents the reader with strategies that develop from this methodology.
Fees are $35 for PDMA Members, $45 for non-Members, and $20 for students (includes dinner buffet) For more information, check the New York/New Jersey web site at www.pdma.org/nynj.

February 23-25
PDMA and IIR 10th Annual Strategic & Operational Portfolio Management Event
InterContinental Miami Hotel, Miami, FL
NPDP Recertification: 20 PDHs
Over the past decade, the PDMA & IIR have grown our Annual Strategic & Operational Portfolio Management conference to be THE leading event addressing critical issues in Portfolio Management for New Product Development professionals, cross-industry. In celebrating our 10th Anniversary, the 2005 program will not only set the foundation for R&D portfolio management, from the vision & mission of the corporation, to providing a point of view from the strategic aspects of portfolio management. It will feature presentations by world class corporations on the crucial/tactical aspects of balancing, governance, and decision-making in portfolio management. Join us on February 23-25 in Miami. Visit www.iirusa.com/portfolio for more information.
To register online: go to www.iirusa.com/portfolio or call 888.670-8200 or 941.951.7885 (Int'l) or e-mail at register@iirusa.com.

March 09
PDMA New York/New Jersey Annual Conference
Stevens Institute of Technology
Starting at 9:00 AM
NPDP Recertification: 8 PDHs
Topic: "Managing The Marketing Mix"
For more information go to www.pdma.org/nynj .

March 15
PDMA Great Lakes Chapter Meeting
GVSU University Club, Grand Rapids, Mich.
4:45 Steering Committee
5:50 Product Development Announcements
6:00 Presentation
6:45 Speaker led Roundtable Discussion
7:00 Continued Discussion & Networking
NPDP Recertification: 1 PDH
Topic: "Taking Control of Your Inner Champion"
The speaker is Leslie Fiorenzo of InVest in People. Fee is $15 (unless you bring two colleagues); students free (checks can be made out to Jeremy Buckingham). For more information contact Brian Green at (616) 654-3116 or brian_green@hermanmiller.com

March 16
PDMA Northern California Chapter Meeting
Location: TBA
11:30 AM - 1:30 PM
NPDP Recertification: 2 PDHs
Topic: "Managing Risk in Product Development"
Developing a new product can be one of the riskiest ventures for any company. Depending on the product, the project size and scope can be quite large and costly. How should a company mitigate the risk in Product Development? What is the product manager's role in risk management? How can the product manager's relationship to the development team contribute to risk and risk management?
For more information, check the Northern California web site at www.norcalpdma.org.

pdma VISIONS

Insights into Innovation™

Subscriptions: *Visions* is PDMA's quarterly trade magazine, keeping members abreast of trends and developments in the NPD world and the latest thinking of product development and management leaders. All PDMA members receive print copies of *Visions* as part of their membership package. Subscriptions are available at $85 per year in the U.S. or $125 abroad. For further details, contact Bob Fogle, Circulation Director, at *bobfogle@earthlink.net*.

Back Issues: To order back issues, contact Bob Fogle. Single issues: U.S. $10, non-U.S. $20; multiple issues: 10 for $100, 20 for $175, 30 for $250. Plus shipping.

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Additional PDMA Publications

- ***The Journal of Product Innovation Management* (*JPIM*)** is the academic journal published bimonthly by PDMA. It is included in PDMA membership and accessible to members online at pdma.org. Institutional subscriptions are also available ($589). For further details, call 800-835-6770 or 781-388-8206 (U.S.) or +44(0) 1865-778171 (U.K.) or e-mail *subscrip@bos.blackwellpublishing.com*.
- ***The PDMA Handbook of New Product Development, First Edition,*** Milton D. Rosenau, Abbie Griffin, George A. Castellion, Ned F. Anschuetz (John Wiley & Sons, New York) $125. Go to *pdma.org* Bookstore to order.
- ***Drivers of NPD Success: The 1997 PDMA Report***, Abbie Griffin, University of Illinois at Urbana-Champaign, 32 pages (PDMA, Chicago, Ill.) $20/copy or $15/copy for PDMA members. Go to *pdma.org* Bookstore to order.
- ***The PDMA ToolBook for New Product Development 1***, Paul Belliveau, Abbie Griffin, Stephen Somermeyer (John Wiley & Sons, New York, March 2002) Hardcover $69; ISBN: 0471206113. Go to *pdma.org* Bookstore to order.
- ***The PDMA Foundation's 2004 Comparative Performance Assessment Study (CPAS).*** Initial findings available for $149.00 ($119.00 for PDMA members) from the PDMA website (*www.pdma.org*). "Visions CPAS Highlights," (July 2004 Visions) by Marjorie Adams-Bigelow and Doug Boike may be accessed on the *Visions* pages of the PDMA website (*www.pdma.org*).
- **"PDMA 2003 Annual Review"**—Order from Bob Fogle at *bobfogle@earthlink.net*.
- ***The PDMA Handbook of New Product Development, Second Edition***, Kenneth B. Kahn, George Castellion, Abbie Griffin (Wiley & Sons, New York, projected publication date 2004) Go to *pdma.org* Bookstore to order.
- ***PDMA ToolBook for New Product Development 2***, Paul Belliveau, Abbie Griffin, Stephen Somermeyer (Wiley & Sons, New York, projected publication date 2004) Go to *pdma.org* Bookstore to order.

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