

How to Improve Your New Product Development and Delivery Process

Finding a better way at Proliant, Inc. and other companies.

Dale Brethauer

Why do so many new products flounder as they journey from innovative spark to the customer? Many don't even make it out the door, fail to find their market niche, or fizzle financially. What is needed: an effective, step-by-step process aligned with strategic organizational goals. Internal collaboration, partnership with customers and suppliers, process audits, "gate reviews," and other elements ensure a better shot at successful product development and launch, as well as market acceptance.

Proliant, Inc.: Looking for a Better Way

The new product development process transformation at Proliant, Inc. (known as AMPC, Inc. until January 2001) provides a good example. Until 1997, this rapidly-growing company based in Ames, IA lacked a formal process for nurturing and bringing its new protein products to market. Proliant is in the food, nutrition, human health, life science research, veterinary vaccine, and biopharmaceutical markets. Annual sales increased at a double-digit rate for the last three years.

The company was growing so fast that research and development (R&D) would come up with a new product and then the

rest of the corporation would say, "Whoa! We can't produce this product and our customers aren't ready for it." There were disconnects about how to develop and produce a product and get it into customers' hands.

"We were working on too many projects. The squeaky wheel got the attention," according to Vice President of Research and Development (R&D) Steve Welch. "We needed to find a way to bring cross-functional attention to new product development, and to sift through and select projects with the best strategic fit and financial possibilities, instead of chasing all the rabbits."

Welch had just moved from his job as director of finance to head Proliant's R&D in 1997 when he attended one of my seminars on new product development and delivery. At that time, the company was named AMPC. Steve discussed the need for a new product development process with others in the company, and in six months, said they wanted to go ahead with the process changes — tailored to their corporation.

Their initial objectives included:

- * Reduce the confusion caused by the lack of a new product introduction process
- * Prioritize new products (projects were coming so fast that one new product might have 15 people working on it, while it didn't have the potential

financial impact as a product with only two or three people working on the project.

* Eliminate disconnects between R&D, marketing, manufacturing, etc.

Cross-Functional Teaming

Realizing the need for a rigorous evaluation of the new product development process, Proliant began a cross-functional project team selection process. The team wanted to produce a process that could withstand current and projected challenges. They knew that this cross-functional approach was one of the best ways to encourage communication and buy-in. The project team included representatives from manufacturing, marketing, R&D, sales, purchasing, and quality assurance (QA), and I was also on the team.

Our project team went-off site and talked for two days about the keys for a successful process. The seven keys we discussed were: clear objectives, a cross-functional team approach, upper management support, customer-supplier involvement, robust design of product, a structured process with a method for carrying it out, and economic justification. We were aiming for successful product transfers from R&D through manufacturing and on to the customer, with acceptance from the entire organization and benefits to customers as well as Proliant. We knew that competitive advantage and higher profits from a streamlined process would accompany improved responsiveness to customers' needs.

The team members first learned the tools of new product development and determined how to adapt these concepts to Proliant's environment. Then they developed, implemented, documented, and trained their employees on their new product process. This process was tried on a couple of example projects (a food grade bovine plasma product sold in the surimi industry and a food grade plasma product used primarily in the overseas meat industry as a binder, to provide texture, etc.) during the next six months. By the end of this

early six-month stage, using a "back of the envelope" calculation, employees were able to grind through the numbers about product costs and payback, etc. in just three minutes — a job that previously required three to four weeks of the accounting group's time.

They had strong buy-in for these projects from all of the project team members. On the R&D side, for example, we had two technical people who traditionally had been pulled between projects, so they saw a lot of value in what we were doing. Manufacturing and marketing and other people also liked the idea that products were not developed and then just "tossed over the wall" for production and marketing.

The Transfer Model, PRIDE Process

The Proliant team also wanted to develop a name for its version of the product development process (transfer model). Using a pride of lions for its logo, the team adopted the "PRIDE" acronym (PProduct and Idea Development Excellence).

The project team addressed the need for changes in an initial transfer model. It had decided (during a model revision) that the process champion should top the process organization chart and that the approval committee (senior corporate managers) should reside at the bottom of the chart in an advisory capacity. In the middle would be a core project team comprising sales, manufacturing, R&D, QA, and a business unit manager (BUM). A process manager also reported to the champion.

The company also had a PRIDE process manager overseeing all new products going through the pipeline. If things got out of line, reviews were not completed, etc. this manager set up meetings between R&D, senior management, and others as needed to bring the transfer process up to standard.

Although the team still endorsed the revised transfer model, they added four new elements: 1) use Proliant's existing approval forms as a guide, 2) indicate the interface of work teams reporting to the

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Figure 1. The project team revamped the transfer process model as shown. Source: *New Product Development and Delivery* by Dale Brethauer (AMACOM, New York, 2002, p. 129, reprinted with permission).

core team, 3) identify customer and supplier integration in the model, and 4) add three directors to the approval committee.¹ Their revised PRIDE process model is shown in Figure 1.

Timelines encouraged progress, yet the transfer process became *task-driven rather than schedule-driven*. The core team developed timelines and milestones for each stage of product development, but ensured that work needed in each stage

was completed before moving along to the next one. The core team completed its transfer process model development within five months, beating its projected timeline by a month.

The People Side of Change

Although our project team represented a good balance of work experience, we sought to improve our effectiveness by

looking at work preferences. A Myers-Briggs-type rating process helped us to gain insight about team members' work preferences (introvert versus extrovert, creative versus analytical, structured or flexible, etc.) and uncovered balance and diversity in this area.

This understanding was helpful as the team further refined its objectives, selected preferred transfer tools, reviewed new product signoff forms, completed additional stages of its transfer process work, and communicated with the entire Proliant organization.

Teamwork was critical to the success of these efforts. When an entire team comes up with objectives, they buy into it; a big reason why teams fail is unclear objectives. Group consensus is more powerful than an individual opinion — and you gain better quality of your objectives and implementation efforts.

Selecting Transfer Tools

Various communications, task, and financial tools should be reviewed and then selectively used to improve the new product transfer process.² They can be grouped in seven categories: clear objectives (SMART objectives and achieving group consensus); a cross-functional team approach (selecting a cross-functional team, the concept of a champion, and productive meetings); upper management support; customer-supplier involvement; robust design and product (fit-for-use/deliverables checklist, Pareto's Law - reduce production costs, value-added flow analysis, plus design for manufacturing, assembly, experimentation, and testing); a structured process methodology (front-end loading, Stage-Gate methodology, process metrics, and process audit); and economic justification (cost estimating, net present value, economic measures of merit [did you make the cost of capital or enough payback, and what were the internal rate of return and discounted payback period, or how long money is at risk?], and setting project priorities). A useful reference in the economic justification area is the book, *The*

Power of Strategic Costing by Dale Brethauer (AMACOM, New York, 2000).

Economic measures of merit enable users to see the rate of return and cost of capital — information that you can use to prioritize other projects. Rate potential projects with the highest projected rate of return at the top. Then, based on available money, choose projects are most important. Each organization is at least slightly different. Pick and choose which tools make most sense for your company.

Proliant's project team considered all of the transfer tools, then selected these tools:³

* *SMART objectives.* Setting clear objectives is an essential project team responsibility. When an entire team comes up with these objectives, they buy into it and more effectively gain support throughout the organization. These objectives, in many organizations such as Proliant, can be called "SMART" (specific, measurable, accountable, realistic, and time specific). Acronyms simply make it easier to remember and communicate about the elements of a concept or process.

After an initial transfer model was modified, the team met in January 1998 to revisit the transfer model, set up team objectives, review transfer tools and related forms and templates, and develop a deliverables chart. (Proliant's SMART objectives are shown in Figure 2. They also established PRIDE metrics and developed an initial Stage-Gate process. The Stage-Gate process is explained later in the article.

* *Select a cross-functional team*

* *Select a champion to lead the effort* — such as Steve Welch at Proliant — who is passionate about the project and a key link with upper management.

* *Have productive meetings* (do your homework about a meeting, set up an agenda to reduce time in meetings, think seriously about who should be at the meeting, and have a timekeeper as well as a facilitator.⁴

* *Robust design* is part of the picture. Develop a fit-for-use/deliverables

checklist; for example, have all regulations been considered, as well as a patent search, design for manufacturability, DFM, beta testing, etc.? Pareto's Law indicates that 80 percent of cost is found in 20 percent of operations; learn to identify all steps in your process and the costs associated with each one; get the biggest bang for the buck by focusing on the steps (20 percent) with the highest cost and try to reduce those. Value-added (VA) flow analysis will assist these efforts; write down the time for each step and determine whether it is VA or non-value-added (NVA); then eliminate NVA activities — a very powerful tool. Use design for experimentation and testing concepts: Evaluate the design process and see how you can simplify it.

* *Front-end loading* is part of a structured process methodology: You will spend less time and money over time, if you look up front at the economics of the project, manufacturing processes, etc. before committing to a project; upper management buy-in and feedback including their acceptance of decisions made at a lower level are essential here.

* *Stage-Gate process*: R.C. Cooper developed it, as described in his book, *Winning at New Products*.⁵ Divide a project into several stages (five to seven is a common choice) such as idea/concept, bench testing, pilot plant testing, plant tests using the steps that have been identified for production, construction and installation of a facility (if needed) for production of a new product, implementation (an initial production run, then process debugging, and later market launch and execution), and audit (audit the process and evaluate the metrics).

More About the Audit Process, Gate Reviews, and Process Metrics

Each stage of the transfer process is important as information is gathered and uncertainties about the product development and launch are eliminated. The audit

Figure 2. Proliant's SMART objectives, as shown in the book, *New Product Development and Delivery* by Dale Brethauer (AMACOM, New York, 2002, p. 130, reprinted with permission).

process, for example, is critical. You are holding a team responsible for a project through implementation. After you have completed the initial implementation, three years later the team will have to come back before management and explain how well that project is doing.

Gate reviews should be completed after each stage before the project goes on to the next stage of development. Thorough gate reviews enable project team members to make any needed adjustments and decide whether the project should move forward or be killed. Focusing on strategic and business issues, they are distinct from technical reviews and project status reviews, which should be conducted as needed.

In a nutshell, you are going through the gate reviews by peers or management before proceeding to the next stage. The review committee may vary according to the organizational environment. Proliant chose an approval committee (including the director of R&D, the general manager, and the manager of operations). Remember that they structured their process with the project champion at the top, with the core project team and a process manager reporting to the champion, and the approval committee on the lowest rung (their job was to listen and evaluate, then give approval or send the project back). The core team pulled in other people as needed for technical or business/strategic under-

standing, and connected with suppliers and customers about the proposed product.

A word of caution about using gate reviews: The idea is to smooth the transfer process, not to add review steps. Proliant's PRIDE process was emphasized internally and in new product collaboration with suppliers and customers. One reflection of this focus was the use of progress forms at all relevant stages of the transfer process. Yet the stage-gate process at Proliant was greatly simplified. They used to have forms requiring up to 20 management signatures for project approvals; now three signatures are needed at specified stages.

Process metrics measure how effectively the transfer process boosts positive change in an organization's new product development process. Along the way, these metrics generate understanding of any product development process deficiencies and continuous improvement. Among the goals and actual metrics to consider: reduce cycle time/actual versus forecast cycle times; raise projects' probability for success/successful projects tally; increase the number of products and innovative ideas for products throughout the organization/annual new product launches total; enhance management commitment to a successful new product transfer process/resources are provided; increase transfer process user-friendliness/the project team's evaluation of the project after it is completed; prioritizing the process/determine whether the proper resources were assigned to the project; raise the organization's economic value added/actual versus forecast economic value.

Process audits enable continuous improvement in the transfer process and for projects in general. A few years after a new product has been launched, the transfer team reevaluates the transfer process — how well did it work, and what was the financial rate of return for the company? They compare project cycle time, projected returns, and market acceptance against goals, building continuous improvement into future projects when they share their learnings from this review. The process audit is more of a learning tool than a means to beat somebody down.

Customer support and continuing involvement are needed in all stages of the product development-marketing-delivery process, including audits. Otherwise, you can develop a product and customer doesn't have that need any more, or the requirement has changed slightly and a competitor grabs the market.

Postscript: Proliant's Progress

Since Proliant adopted the PRIDE transfer process several years ago, Proliant has improved its performance in four key metrics: the number of new products successfully brought to market increased; new product development and launch cycle time decreased an average 30 percent; net income and revenues rose as a result of the new approach; and employees bought into it and share the rewards (the company has an annual bonus program for all employees based on overall profitability).

"PRIDE brings various cross-functional areas together to discuss ideas from the beginning," said Steve Welch. "That is where we need to start. It is important to decide which new product projects to work on. Now we have a better way to find the best strategic fit and financial opportunities for our company.

"For example, our sister company, APC (American Protein Corporation) launched a successful product call Solutein — an IGG plasma protein that goes in solution and is used in animal feeds using the SMART process," he continued. "The project was complicated and had a lot of issues. Using the PRIDE process, we got it to market faster and more successfully because we brought people from different functions together to work on it."

PRIDE benefits also include bringing new products to market when plans for the original one faded. "Our target market data provided enough information to take products planned for one market and successfully launch them in another market," according to Welch. "One is a beef flavor for soups and gravies; we had been working on beef flavor for a single customer and then they went away when their market

changed. We leveraged that project data, and we already had sales and marketing people dialed into the project. Within six months, the project was up and running again. We also had a collagen product used in sausages, and with an extension of our data and customer interaction, we found additional demand in other applications."

Welch added that, from a metrics perspective, one sign of success is market recognition. "Companies in the food processing industry have asked us to come to their operations to help with their product development efforts," he said. "We also have increasing customer involvement on our core teams, which is new for Proliant. Before, we did not talk to our customers in much detail, if at all, before launching a product. Now they are significant players for product development, and that works well. If you can get a major customer on board with a new product, it's easier to go after a market with some success under your belt."

Proliant also fares better when it comes to prioritizing work. The company's new product development project load decreased by approximately 40 percent. "The PRIDE process is front end-loaded, so we are more carefully looking at target markets and asking that all projects be justified, and in turn we are increasing our probability of success," Welch said.

He added, "The PRIDE process is user-friendly and creates common language in our company. When we do cross-functional processes, everyone including R&D, QA, manufacturing, and others are talking in the same terms and understand what process stage we are in, and that really helps us to reduce cycle times, obviously saving money."

Proliant's "lessons learned" from the new product development process transition:

- * The initial evaluations about identifying needed materials and other resources (availability and cost) need to be revisited. The project team needs to scrutinize these "back of the envelope" costs and identify who is responsible for them.
- * Modify your process when needed. For example, "pre-PRIDE" was added to the

Proliant process. That is when the process champion identifies core team members and the process team members informally identify how much time and money will be allowed in "Stage Zero," or initial evaluation. "It has been a good modification," Welch said.

"Otherwise, project team members could spend several months and lots of money, and say, 'Hands off' to scrutiny for a time — a resource drain."

- * It seems to be common sense, but some companies don't do it: Involve marketing in Stage Zero.

New products are the life blood of any organization. Managing the new product development and delivery process requires a structured and disciplined process that is embraced by the whole organization. The ultimate success of this process is its effect on the company's bottom line. This article discussed a successful process which did just that.

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Footnotes

1. Brethauer, Dale, *New Product Development and Delivery; Ensuring Successful Products Through Integrated Process Management*, AMACOM, New York, NY 2002, pp. 128-129.
2. *Ibid.*, pp. 1-2.
3. *Ibid.*, pp. 130-131.
4. Kayser, Tom, *Mining for Group Gold*, Irwin Professional Publishing, 1996, Chicago.
5. Cooper, R.C., *Winning at New Products*, Addison Wesley publishing Company, Reading, MA, 1993, phone 800/447-2226.

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