



People-Powered Innovation:

Overcoming the Challenges in New Product Development

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Executive Summary

New products and innovation are essential for a company's growth, yet most companies have struggled with getting their ideas to market as quickly and as profitably as possible. Despite many system and business process improvements in the past several years, companies are realizing that they have not adequately addressed the most critical aspect of new product development — their people. A strategy centered on people is the key element of new product development, ensuring that companies execute on all phases of the innovation life cycle. Companies should carefully consider various approaches to leveraging the power of their people, so that they can launch innovative products faster and more profitably.

New Products and Innovation Are Critical

How important is product innovation? According to the 2003 APQC Benchmarking Study, sales of new products generate 9% to 38% of a company's total revenue, with the average company generating approximately 30% of revenue from new products. For a company with \$1 billion in annual revenue, approximately \$300 million comes directly from new products and services.

Yet despite the criticality of new products, fewer than 20% of products are considered a success in the marketplace (APQC, 2003). Even worse, according to the Product Development & Management Association (PDMA), nearly 75% of all product development projects fail.¹

The key reasons cited for poor product innovation include:

- Ad-hoc product strategy and planning
- Commitment to overly aggressive or unrealistic launch dates
- Inadequate R&D resources to deliver products
- Difficulty in reacting to changes in scope, deadlines and resources
- Lack of communication and coordination among dispersed R&D teams
- Challenges with managing outsourced development, contractors and suppliers

Although leading companies have been able to overcome many of these challenges by taking a holistic view of the product innovation process, they have also realized that the cornerstone for transforming their product development strategy is focusing on their people to drive more innovative and profitable products.

Past Development Initiatives

With so much money invested in new product development, what have companies done to improve and streamline their product innovation? While business process reengineering and organizational change management are often crucial aspects of improving new product development, recent technology advances have provided companies some of the most interesting and promising opportunities to improve and innovate their new products.

Within the last ten years, a wide variety of applications have been developed to help companies get their ideas to market faster and more profitably. Recent solutions have focused on three elements of the product development life cycle, including managing product data and files, streamlining design collaboration and sharing documents. Figure 1 depicts some of the vendors in each of those areas.



Figure 1. Recent R&D Technology Vendors.

Yet despite initial optimism, companies have failed to realize the full benefits that many application vendors originally promised.

Product Data Management

Product Data Management (PDM) vendors – sometimes referred to as Product Lifecycle Management (PLM) vendors – traditionally have come from a background in managing Computer-Aided Design (CAD) files, and have extended their functionality within the last several years, especially with managing bills of material (BOM), formulas, and documents.

While many companies have found that PDM solutions address some of their product development challenges, there are several key limitations with PDM tools. One major limitation is that PDM applications focus primarily on material goods – for example, an injection-molded cell phone cover or ingredients for a latex paint product. These solutions generally are not capable of managing non-material product information such as software code and electrical designs, which now constitute a significant percentage of many of today's products. Another major

¹ Journal of Product Innovation Management: Griffin, A. and Page, A. L. "PDMA success measurement project: recommended measures for product development success and failure". Nov. 1996.

issue is that PDM solutions offer little functionality for managing the people, development milestones and product strategy needed for effective product innovation.

Design Collaboration

Applications for design collaboration also have roots in the creation and management of CAD files, and many of them also provide PDM functionality. The central value proposition of design collaboration is to enable dispersed design teams the ability to simultaneously work on designs, so that design cycle time and errors are reduced.

While global design teams have benefited from design collaboration tools, these benefits have been limited primarily to mechanical engineers and industrial designers. Also, downstream users in areas such as marketing, operations, and services, rarely benefit from these collaboration capabilities. Finally, while design collaboration tools help people complete design deliverables, they have the same limitations as PDM tools in managing people, milestones and strategy.

Document Management

Since documents are created in just about every step of the product development process, document management applications have become critical to R&D organizations to store, manage, route and approve documents, such as business requirements, test specifications, and launch plans. While document management has traditionally been used only within a company, recent technology advances have enabled R&D organizations to easily and securely share documents with external partners.

While document management applications streamline the sharing and approval of documents, they offer little support for managing the overall timeline of document completion, the activities needed to create documents, or the actual people who are responsible for the documents. Also, while documents are a core part of new product development, there are many other deliverables that are not documents, such as first article parts and software code. Finally, most document management tools are so open and unstructured that they cannot enforce any standard development process. After a few years, companies who rely solely on document management tools end up with “maverick” development processes, where there are hundreds of different methodologies that their employees have come up with to manage their product development programs. Even worse for management is the inability to oversee or roll up disparate information from their “maverick” product development teams.

People Are At the Center of Innovation

While many companies have implemented and received benefits from recent technology solutions — including PDM, design collaboration and document management — they are still struggling with getting great ideas to market as quickly and profitably as possible.

Leading companies in a wide variety of industries realize they need to better understand how to leverage the power of their people in order to drive product innovation. People are the key driver for product strategy, customer satisfaction, launch dates and quality.

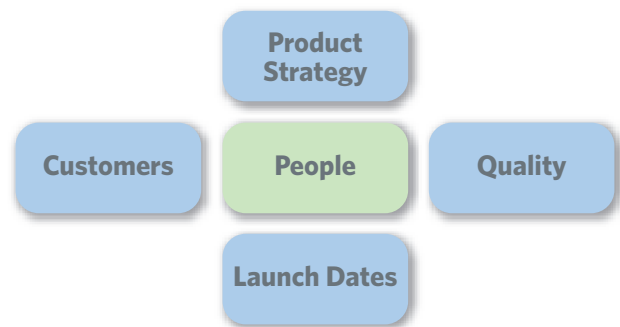


Figure 2. People are at the Center of Innovation Excellence.

Companies with increased visibility and understanding of their people’s skills, availability and commitments are better able to answer key development questions:

- **Product Strategy.** How realistic and achievable is our product portfolio based on the number of people that we have, their current work assignments and their skill sets? Will outsourcing some work help us create a more profitable product portfolio?
- **Customers.** How do we better respond to customer demands for new products or changes in program scope and deadlines? If we get a new request from a customer, which people and programs can we shift while still meeting our commitments to current customers?
- **Launch Dates.** Which resource bottlenecks will delay products? Should we be hiring a contractor for a DSP engineering role six months in the future to meet our milestones? Will adding certain people to key phases of product development help us meet our launch dates?
- **Quality.** Who are the best people to work on critical programs? Are they available now, is there some other qualified person who can do the job, or should we hire some specialty contractors? Are people too over-committed to do innovative or high-quality work?

The companies that can answer these questions have focused on leveraging people throughout the three integrated phases of the innovation life cycle:

- **Decide.** Deciding which products to pursue is the most critical element of product development. Many companies are systematically analyzing and determining which mix of products constitutes their most innovative and profitable product portfolio. However, market leaders are going one step further — they are also looking at their people to determine if their product portfolios are realistic and achievable — based on the number of available resources, their skills and their commitments.
- **Develop.** Successful product development hinges on seamless execution. Besides ensuring that their people can collaborate and work as efficiently as possible, world-class companies are relying on enterprise visibility of their people to be better able to respond to changes in deadlines and estimates.
- **Deliver.** New product development does not stop once R&D is finished. Successfully launching a product into the global marketplace is essential for maximizing product revenue. Market leaders are leveraging visibility of people in multiple functions beyond development — marketing, manufacturing and services — to meet global product launch dates.

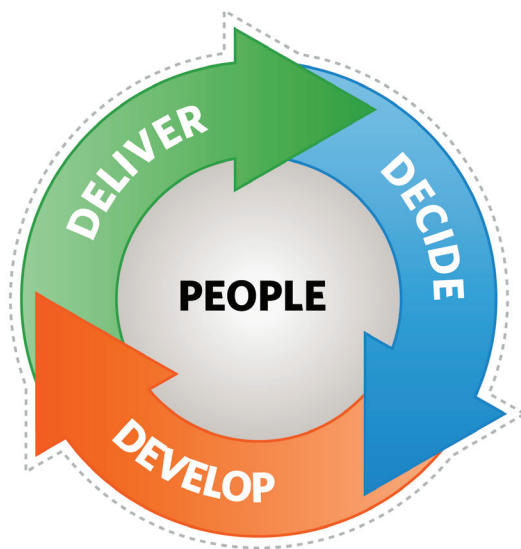


Figure 3. Integrated Phases of the Innovation Life Cycle.

The Optimal and Realistic Product Portfolio Considers People

In the Decide phase of new product development, companies first gather and compile new ideas, enhancement requests and customer orders. Because this information is often scattered in multiple locations, many companies have adopted internet-based solutions to centralize idea collection and to eliminate duplicate or missed opportunities. Leading companies are also using techniques like benchmarks or templates to accurately estimate how long, how profitable, and how difficult it will be to pursue new ideas or customer orders.

Once companies are able to obtain rough timelines and estimated ROI for their best ideas and opportunities, they can use standard criteria to objectively rank opportunities against each other. Companies can also use the functionality in leading product portfolio management applications — including graphical bubble charts, portfolio roll-ups, and efficient frontier optimization — to analyze product portfolios across the entire enterprise.

What sets leading companies apart from their peers is the ability to understand and visualize how people impact product portfolio planning. The number of resources, their skills and their availability help determine the timing and practicality of the overall product portfolio:

- By considering people, companies can quickly see which products and programs are dependent on the same key resources. If resources are constrained, companies can then shift product launch dates to more effectively balance the demand for resources across all products and see the impact on overall product profitability.
- If shifting product launch dates is not feasible, companies can also analyze how adding or shifting people to critical phases of a product development program can accelerate completion of key milestones, and see the impact to the overall product portfolio.
- Certain development programs require hiring or contracting additional people. Market leaders are looking at overall resource trends in their product portfolio to dictate their hiring, training and outsourcing strategy.
- As people are added and removed from key programs, and as launch dates move around, companies can also quickly reassess the ROI for all their new products and the impact to the overall product portfolio.

People Drive Efficient Product Development

According to the Project Management Institute (PMI), companies must focus on successfully planning, executing and controlling their programs during the development phase.

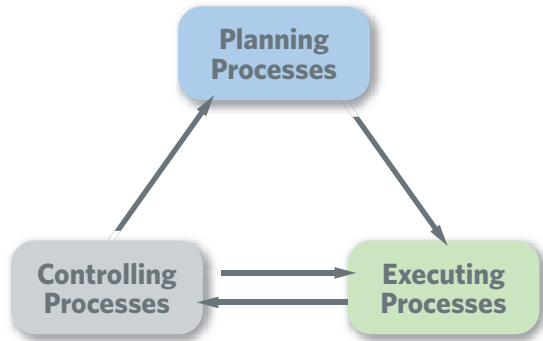


Figure 4. Managing Processes during Development (PMI, 2000).

- During planning, companies need to quickly develop project plans, identify potential risks, plan resources and create preliminary budgets. Best practice templates are increasingly used as recent technology advances have enabled companies to securely share knowledge across the enterprise. Also, companies are taking advantage of integrated technology solutions that dramatically simplify the process of creating highly detailed and accurate project plans, resource estimates and budgets.
- With execution, the key objective is to carry out the project plans by performing specific activities. As part of that objective, it is critical for the development organization to collaborate on information and ensure that development is meeting predefined quality standards. Web-enabled applications have greatly simplified the ability to provide status updates, review issues and action items, securely share documents, and ultimately, roll up information across the entire R&D organization.
- Controlling processes are centered on monitoring and measuring performance to proactively identify variances from the plan. Leading companies are taking advantage of web-enabled solutions that provide real time intelligence and oversight into all aspects of development, including earned value analysis, automated alerts and change control.

Market leaders have realized that they need to focus on people through the three processes of planning, executing and controlling. Clear visibility into their people is the best way to get development programs quickly staffed with the people who have the right skills, experience and availability. Since people are often the major cost driver for development initiatives, businesses can quickly obtain detailed and accurate budgets based on their resources and their work assignments. As projects are underway, clear visibility into resources ultimately helps R&D quickly understand if there are any issues with milestones and deliverables, and whether shifting or adding people to key tasks can resolve potential bottlenecks.

People Help Deliver Products Successfully

Groups that are responsible for launching new products face many of the same challenges as their development colleagues. However, there are two key differences between delivery and development activities:

- Marketing, manufacturing and services groups are highly dependent on their development counterparts and rely on visibility into development release dates for planning or rescheduling their own activities.
- The degree of regionalization is generally much higher than with development. For example, a single computer game may be involved in multiple marketing programs that vary across countries, regions, local communities, and retail chains.

Recent technology advances have made it easier for marketing, manufacturing and services groups to have real time information into development milestones as well as their own globally dispersed efforts.

Market leaders are also taking people into account during the delivery phase. Identifying the best people for key activities — based on their skills, experience and commitments — is essential for ensuring that high-quality work is done and delivery dates are met. As development release dates and market windows shift, leading companies reallocate their people to other activities and ensure that their people are fully utilized and productive. For example, if a field service representative has to address an unexpected customer issue, clear visibility into all service personnel can help companies identify other qualified candidates to fulfill that person's commitments without impacting customer deadlines.

A Programmatic Approach for People & Innovation

Companies can pursue a five-phase approach to transform their R&D organizations by incorporating people into the innovation life cycle.



Figure 5. Five Areas where People Drive Innovation.

- **Schedule and Resource Visibility.** The first step a company must undertake to transform their product development processes is ensuring they have visibility of their product development schedules across their entire R&D organization. This is harder than it sounds, especially considering that today many of the world's largest companies still rely on spreadsheets and project plans stored on employees' hard drives. Similarly, companies who want to transform their innovation life cycle need to also have visibility into which people are working on which products. Companies should know which key people are overallocated and if there are other people with the right skills available to help them. By understanding and monitoring milestone and resource trends, companies can more easily identify the issues with their products and take proactive measures to correct them.
- **Process and Financial Management.** Once companies understand what their people are working on, they can then take measures to automate key processes to accelerate product development. This could be as complex as business process reengineering or as simple as automating approval processes for deliverables. By having clear visibility of people's work, many companies are able to accurately estimate product development costs and use that information to drive R&D efficiency and capitalization of R&D expenses.
- **Resource Planning.** Either in parallel or immediately following process and financial management initiatives, many companies are attacking the complex problem of resource planning. Because of recent technology advances, market leaders are now able to take advantage of their visibility into all people, products and programs to be more proactive and responsive to changes or new demands. Best-in-class companies are ensuring that they consider all people in their development network, including employees, contractors, outsourced development, suppliers and partners. Through real-time insight into their globally dispersed R&D network, companies can easily create multiple what-if scenarios to assess the impact of shifting people, milestones and priorities. Companies cannot only react to unexpected changes but also be more proactive in their hiring, training and outsourcing strategy.
- **Product and Idea Management.** Many companies are also addressing product management issues to improve their innovation life cycle — especially the analysis and planning of new ideas, enhancement requests, and product requirements. Besides using internet-based systems to prioritize product ideas and features, one of the most effective ways to enhance product management is to accurately estimate the people and time needed to develop new product requirements. Having a clear view of past work and the people required allows companies to create a more informed and realistic product strategy.
- **Product Portfolio Management.** Once companies address the many challenges of product innovation, they can then implement a proactive and realistic approach to product portfolio management. Besides having the maturity and experience to define standard corporate criteria and goals for all their R&D initiatives, they also can leverage the visibility into their people to determine if their optimal product portfolio is actually possible. Leading companies are also taking into account how product timing affects revenue streams, competition, and potential markets — and then shifting people and product launches to ensure that their overall product portfolio is as profitable as possible.

Conclusion

Because new product development is so critical, companies should continue to focus on efforts to improve their innovation life cycle. Companies should not waver in their commitment to R&D if previous investments have not extracted the full benefits originally expected. Rather, these organizations should learn what market leaders have already discovered - that people are the center of innovation. Companies need to take a programmatic and tailored approach to incorporating people into their innovation life cycle. By having a clear understanding of the limits and potential of the people in their globally dispersed development organizations, companies can ensure that they can decide on the best products to pursue, develop products on time and successfully deliver innovation to the global marketplace.

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