

Silver Streak Partners LLC

Making R&D work better

Rightsizing Your New Product Process

Updated May, 2010

Author: John Farnbach

The process you use to develop products is one important factor driving the business returns on your new product investment. If your company is just defining your first NPD process – or if you’re improving an established one – how do you decide what will work best for you? Some experts subscribe to the dogma that you should copy the "best practices" of successful companies ... but I don't think so.

Your company is unique – the size and complexity of your NPD operation, your product technologies, your market dynamics, and your company culture all impact your process requirements. It's unlikely that a process that works at some other company will be a good fit for you. Rather than just copying another company's process, consider a few basic ideas to help you design one that's custom tailored for you.

The key to designing an NPD process is realizing that the effects of a process aren't just benefits, but a mix of benefits and costs. A process that provides a net benefit for a large company will create a costly overhead burden at a small one. Whether you are developing your first process or improving an established one, start by understanding both the costs and benefits of NPD processes and compare them to what you need.

Does your process fit? Whether your company is small with an unwritten NPD process or larger with an established process, you can identify symptoms that your process may not fit.

To design a process that fits, start with a look at both the benefits and the costs of NPD processes.

- Does your NPD operation seem chaotic, with haphazard outcomes? You would probably benefit from the systematic, repeatable workflows of a more structured process.
- Does your product development seem sluggish and unresponsive? Bureaucracy and overhead in NPD processes tend to increase over time. Look for places to cut out process details.
- Are people working around the process? If developers or managers are taking shortcuts in an honest effort to meet business goals, you may have a process problem, not a discipline issue.
- Has your NPD operation become more complex? Sheer growth, a functional organization, or acquiring a remote design center all need more structured communication in your NPD process.
- Is administrative compliance more important than business results? If the process itself has become the goal, it has become too bureaucratic and you should overhaul it.

Overview

When it comes to NPD processes, some experts say you should follow the "best practices" of leading companies. I don't think so—that's like buying a suit because it looks good on someone else.

For small firms just getting NPD organized, the processes used by big companies carry far too much overhead.

And large organizations seeking to improve existing processes need to beware of adding ever more process structure, which inhibits innovation.

My suggestion is that firms of any size should design a custom fit process to meet their unique needs.

This article was published in Silver Nuggets, the R&D management newsletter. For a free subscription, visit the resources page at www.silverstreakpartners.com.

Copyright © Silver Streak Partners LLC. Forwarding to colleagues permitted

- Are there problems in manager/developer collaboration? The causes for unsatisfactory interactions (from either party's perspective) are likely to be found in your NPD process.
- Is there a "valley of death" between innovation and development? Processes that optimize development of well-defined products in familiar technologies can be toxic to innovation.
- Are you still competing effectively? Core competitive strengths, such as product performance, market agility, and manufacturing cost are all determined by your NPD process. If you're falling behind on some critical strength, your NPD process may not fit your needs.

If you see some of these symptoms at your company, you may be able to improve your return on product innovation with a custom fitted NPD process.

Understand process benefits and costs. To design a process that fits, start with a look at both the benefits and the costs of NPD processes. Generally, processes reduce development expense and risk by imposing order on the otherwise unruly NPD activity, while process costs stem from reducing development speed, flexibility, and innovation.

NPD processes reduce development expense by sequencing work to reduce risk of wasted effort and improve efficiency in project support activities. However, there is an associated cost: efficient work sequences usually reduce project speed. For example, waiting until a design is finalized before developing manufacturing test may seem efficient, but having a test engineer working concurrently with design engineers will usually cut schedule time and reduce a product's manufacturing cost.

A vital rule in process design is to avoid thinking that more structure is better.

Another benefit of NPD processes is that different projects follow repeatable workflows that institutionalize learning and avoid repeating past mistakes. However, uniform workflows can inhibit flexibility when goals differ from one project to the next. For example, a project with a critical time to market goal requires a workflow much different from one whose primary goal is product quality. More importantly, innovators often complain that a process designed for efficient development can be toxic to technical innovation, by restricting the freedom to explore alternatives outside the constraints of detailed goals and committed schedules

NPD processes often dictate more formal and standardized communications surrounding a development project. This provides a benefit by making cross-functional collaboration more efficient, with different projects conforming to a common template. This uniformity also benefits managers who must oversee many different projects and can quickly understand status and grasp issues without having to become familiar with multiple reporting formats.

In the cost column however, formal and standardized communications create overhead for developers who must write status reports, maintain documents, and prepare for review meetings. If your design effort crosses organizational and geographic boundaries, you may need formalized communications to ensure effective collaboration and support. But when your entire NPD team is closely collocated, development will be more effective with less communication overhead.

Examine your needs. The size and complexity of your NPD organization is a major factor in setting your process needs. Multiple projects, large project teams, and a functional organization structure all drive a need for standardized workflow and formal communications. Companies organized around autonomous development teams will find formal communications to be burdensome compared to person-to-person dialog.

A critical part of understanding your process needs is determining the optimum balance of NPD performance goals that supports your strategy. NPD goals fall along five dimensions: product attributes, development expense, NPD response time, NPD delivery, and innovation (1). These goals compete with each other, and your NPD process determines tradeoffs among them. For example, you might compete on time to market against a competitor with low manufacturing cost. In that case, the process that fits you best is not the one for your competitor.

It may not be possible to specify an exact, optimum balance among all five NPD goals, and doing so runs the risk of installing an inflexible process that over-constrains project decisions. But to arrive at a well-fitting process, you need to know which goals are firm requirements and which are open to tradeoffs. For example, if reliable schedules are an absolute requirement, your process may formalize project planning and control while leaving product features and manufacturing cost to be managed differently for different projects.

Quality is a product attribute that deserves separate consideration in defining your process needs, because quality considerations run throughout an NPD process. Every company claims to produce products of superior quality, but stringent quality measures built into a process will inhibit development speed and innovation. If your core competitive strength is technical innovation, your process should differ from a company whose core strength is product quality.

Finally, your organizational culture has a significant impact on NPD process needs, which can lead to real problems if ignored in your process design. In a culture based on individuality and creativity for example, you need a process that defines activities at a high level but allows teams the freedom to manage details. But in a company that values operational excellence, the lack of details will seem frustrating and vague.

Design the process you need. Just as in product design, there is no simple recipe for the design of an NPD process. But here are a few rules that you can use to arrive at a process that fits your needs.

First, consider different process paradigms. The traditional basis for NPD processes is the stage-gate model (2), where development work proceeds from one stage to the next through approval gates. Stage-gate processes can be strictly sequential, with activities rigidly separated between stages, or they can be more concurrent, with overlap between successive stages. Sequential processes tend to reduce development expense, while more concurrency generally supports faster speed.

A process paradigm that differs radically from the stage-gate model is the agile methodology that many software organizations are adopting. In agile development, teams produce rapid design iterations with very informal planning and continuous customer feedback, allowing them to respond to changing requirements while maintaining dependable release schedules. Hardware product companies can't copy agile software methods exactly, but emerging methods for Flexible Product Development (3,4) improve results significantly when innovation is high and markets are dynamic.

A vital rule in process design is to avoid thinking that more structure is better. Companies with long established processes find that complexity seems to increase continually over time: The solution to every problem seems to be to add more process details. During your process improvement cycles, devote conscious effort to eliminating process structure that no longer adds net benefit. If you're designing a new process, focus on the specific problems you're trying to solve, and add only enough structure to address them.

It's essential that executives participate actively in NPD process design because the process defines their oversight of and interactions with the NPD effort. The more detailed information that executives require, the greater the communication overhead for the development teams. Executives whose egos are invested in their role as gate keepers may have to change their perspective to avoid wasting teams' effort in preparing for ceremonial review meetings with predictable outcomes.

Custom fit is important. You shouldn't just copy the NPD processes of another company, no matter how successful that company may be. (And no matter which of your executives used to work there.) Learn from successful companies' process thinking and principles, but remember that their NPD process is best for them, not for you. Whether you're defining your company's first process or improving an established one, custom fit your process to your company.

Notes:

- 1) For more on the five dimensions of NPD performance, see Silver Nuggets Newsletter, April 2004: "Improving R&D Results: Count on the Uncountable"
- 2) More about designing stage-gate processes can be found in *Managing the Design Factory*, Donald G. Reinertsen, The Free Press, 1997
- 3) Flexible development tools are described in *Flexible Product Development*, Preston G. Smith, Jossey-Bass, 2007
- 4) Another reference for flexible development methods is *Agile Project Management*, Jim Highsmith, Addison-Wesley, 2004