

Goldense Part II

Two-step selection process helps limit NPD products in the pipeline, according to study

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In the second in a series, the authors report that companies are moving toward a more complex selection process early in development which helps limit NPD products in the pipeline, according to Goldense Groups' 2002 Product Development Metrics Survey.¹

The number of companies using a 2-step or 2.5-step product selection process—rather than a 1-step process—has increased significantly over the past few years, according to a study of product development practices recently published late last year by Needham, MA-based Goldense Group, Inc. (GGI).

The use of this more complex front-end selection process dramatically reduces the number of projects that get approved for full development, according to the study. Eighty percent of the companies surveyed reported that they were reviewing projects 2 or 2.5 times in 2002 before full scale development, up from 63 percent in 2000. By using a 2-step selection process these companies are screening out 71 percent of initial ideas, compared to only 22 percent rejected through a 1-step process—a more than threefold reduction in project approval rates.

The goal of the study, conducted in 2002, was to examine how companies are managing their new product development pipeline. Results of the study were released in late 2003.

Since the late 1980s it has been generally recognized that new products tend to produce more profits than older products. In the face of competition, by regularly introducing new products that have undergone more thorough up-front screening, revenues and profit margins can be grown. The study investigated how companies can maximize the performance of their product selection process in order to boost revenue and profits.

Structure of study

GGI's study, entitled *2002 Product Development Metrics Survey* was conducted by sending questionnaires to a wide distribution of product development professionals in industry in North America, Europe and Asia.



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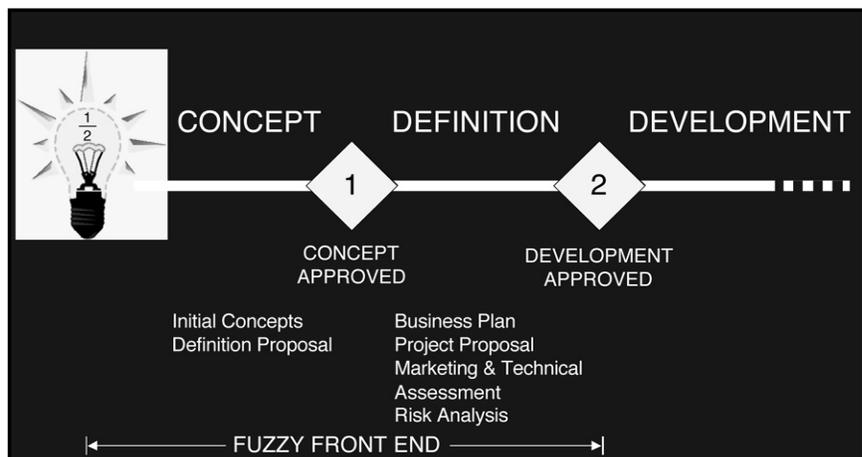
Replies were received from 83 companies, ranging from industrial and medical manufacturers to aerospace, defense, electronics, and chemicals industries. Respondents were asked to provide information on the number of steps in their product selection process. Respondents also were asked to determine the number of products or projects screened at each step of the selection process, in order to calculate the aggregate approval rate of selection. The 2002 survey was completed by respondents during July, August, and early September 2002.

How many projects?

There are many issues in managing the product development process, but a key

issue is “How many products should we be working on?” Typically product development workloads commit between 150 percent and 300 percent of the engineering resources available, and that seldom factors in assets needed for sustaining existing products. Since no company has unlimited financial or human resources, some product ideas should be set aside. In the early 1990s Stephen Wheelwright and Kim Clark, in their book, *Leading Product Development: The Senior Manager's Guide to Creating and Shaping the Enterprise*, concluded that a more concentrated effort on fewer projects/products resulted in greater throughput than an approach that maximizes the number of new prod-

Exhibit 1: Weeding Out Projects Early in the NPD Process



SOURCE: Goldense Group, Inc.

The “fuzzy front end” subjects an idea to as many as two and a half screening steps before proceeding to full development.

uct projects under way at any given time. There is no “rule of thumb” measure for how many product development efforts “should” be under way in a company whose bread and butter is rolling out new products. Companies use a variety of different ways of counting new products and the complexity of the products and their life cycles vary so much that some kind of average would not be meaningful.

How to decide?

What is useful is to examine how the projects/products are selected for allocation of precious product development resources. The front end of the product development process, shown in Exhibit 1 on page 17, consists of one or two screening steps to select the right projects to approve for development. Typically methodologies can be lumped into two approaches. In the 2-step or 2.5-step¹ approach there is a formal review of projects before they enter detailed definition and planning, then another similar decision process before they enter full development. In the 1-step approach the decision about which projects proceed is made only once, at the full development gate.

It is generally accepted that the 2-step method permits a reasonably wide front end to the development “funnel,” but narrows down rapidly to focus on the most productive opportunities. In 2000 some 63 percent of the companies responding reviewed products/projects 2 or 2.5 times before launching full development. In 2002 that percentage had grown to 80 percent

(see Exhibit 2 on this page), strongly indicating that the philosophy is taking hold in leading product development companies.

Even more interesting than the identity of the process steps is the rigor of the process and the number of people involved. Fully 79 percent of the firms reporting in 2002 indicated that the milestone 2 meeting in a 2-step process was a formal review and more than 50 percent had that same formality at the first product selection milestone. This would generally imply some set of criteria that must be met, perhaps a checklist or mandatory format, and a decision process. In the 2-step companies there were, on average, five decision-makers in the milestone meet-

2-step companies. If much of the loading in terms of total capacity used comes from an understanding of the unique business, it would seem essential to get as many sage managers as possible involved in the decision to assure the quality of the decision. The 1-step companies seem to do just the opposite, involving fewer people and using less formality. That difference translates into a difference in the quality and the quantity of projects in the development pipeline.

Disciplined results

In 2002, when all 2⁺-step company projects are cumulated, 53 percent were rejected at milestone 1. It is apparent the companies are learning to “drown some kittens” (Goldense, 1992) or “drown some puppies” (Robert Cooper, 2001). This is a significant improvement over 2000 when only 12 percent were rejected at the first gate. By dramatically reducing the number of projects moving into the detailed concept maturation and planning stage, the quality coming out of that stage improves and fewer resources are required.

Examining Exhibit 3 on page 19, one sees that the product development load moves from over 500 ideas, to 239 projects going through refinement and detailed planning, to 146 actually being developed into products. This ratio of around 3.5:1 from ideas to products is interesting, indicating a fairly rich set of initial choices, first cut in half, then narrowed again at Milestone 2 to focus scarce resources on the most promising product development projects. Compare this outcome with the results from companies that follow the 1-step approach, as shown in Exhibit 4 on page 19.

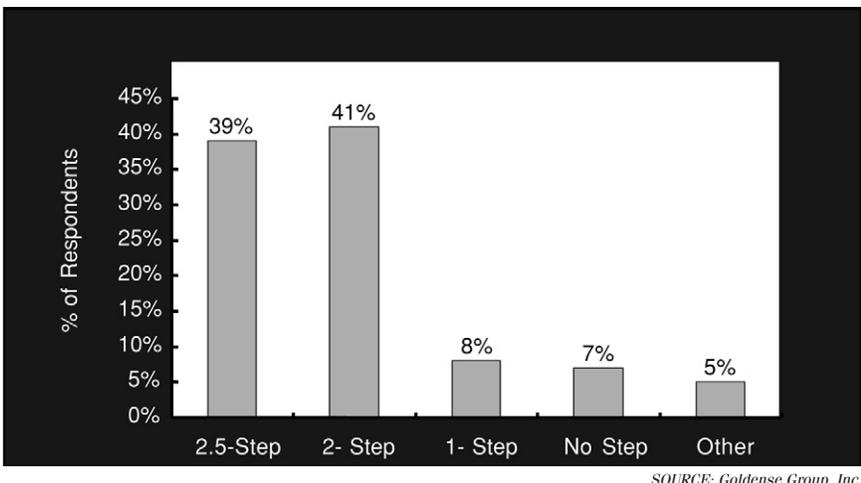
One-step companies brought 590 projects to the single milestone decision point (much like milestone 2) and allocated resources to develop 432 of the projects, or 78 percent. Consider the resources necessary to advance a project to stage two. Technology must be matured, product concepts refined, market studies completed, customer studies conducted, preliminary design and architecture work done and detailed planning and estimating finished. While direct comparisons cannot be made, broad comparisons have merit. Roughly the same number of companies provided detail in 2002 for 2-step (17 companies)

“ The use of this front-end selection process significantly reduces the number of projects that get approved for full development. ”

ings. This formality and participation by key people should serve to reinforce the wisdom of the decision for the company and help make that decision “stick” in terms of implementation.

Contrast the 2-step process with the 1-step approach. Despite the fact that the 1-step approach is an “all the eggs in one basket” approach, only 38 percent had a formal meeting (versus 79 percent at the comparable milestone 2 in a 2-step). Additionally, the 1-step companies averaged three decision-makers *versus* five in the

Exhibit 2: Number of Companies Using Different Product Development Selection Processes



SOURCE: Goldense Group, Inc.

and 1-step (13 companies) approaches and the total number of ideas considered was approximately the same (506 versus 590). The 2-step firms reduced the number from 506 to 239 for full stage one preparation, while the 1-step companies brought all 590 forward. Think about the resources needed to do the detailed work on that many ideas. If the companies were the same size (and this is not necessarily the case), product development resources in a 2-step company could focus on the real development preparation work.

The same rationale applies to full-scale product development. The 2-step companies have already saved resources by screening out a good number of choices at Milestone 1 while the 1-step companies continue to chew up the resource. Then the 2-step companies narrow the menu down to 146 projects—the best ideas—upon which they can focus resources and priorities. The 1-step companies attempt to continue to work on almost 500 projects, many of which are of lower quality. The 1-step companies will be faced with more junk in their development pipeline, as well as having professional staff allocated to multiple projects and jumping from project to project, meeting to meeting, and unrelated task to unrelated task. The difficulty in prioritizing work, the lost time in restarts, and the overall likely inefficiency is apparent.

Advanced R&D

Another interesting perspective is the way one manages the application of research and development resources in early stage projects of advanced R&D. This year we asked respondents whether or not they used the same 1-step or 2-step process they described for product development for advanced R&D. It is often postulated as an argument against “process” and formality that those elements tend to stifle creativity. Yet in 2002 almost 50 percent of the companies said they used the same process within RD&E that they did for overall product development. The vast majority that answered “No” indicated that the RD&E process was less formal. There seems to be a growing confidence that a better decision process yields value.

Companies now realize that the flow of new products from the R&D process is the lifeblood of their revenue and profit streams. Such recognition would necessitate movement of projects speedily through the product development process. The analogy of “inventory turns” or Just in Time (JIT)

Exhibit 3: Results from the Two-Step Process

	Milestone 1	Milestone 2	Cumulative
Rejected	53%	31%	71%
Approved	47%	69%	29%
Total Ideas	506/239	213/146	

SOURCE: Goldense Group, Inc.

Companies that used a two-step process approved only 29 percent of all initial project ideas to continue to full development. (Note: 26 ideas, 239-213, “died on the vine”)

manufacturing and vendor supply might be useful here. There isn’t much value in having a large backlog of incomplete new product

that the average backlog reported does not come close to representing one year of product development work and approaches six-month duration!

“By using a two-step selection process these companies are screening out 71 percent of initial ideas.”

What does that mean? First, it surely indicates that the planning of RD&E and new product development is no longer a set-piece annual budget exercise. With projects and products moving through the pipeline more quickly, there

is an opportunity to make more timely decisions about new product directions. Product development is now more market driven than budget driven. Second, it may mean that product development cycle time continues to be reduced. This is, in and of itself, an important finding. Studies of the automobile industry have shown product development times dropping from five years to two years. All companies strive for that general trend and many are succeeding.

Because the study asks for considerable data from the respondents, only those companies that are sophisticated in the management of product development are likely to respond. In that sense the study results are an early indicator of where industry in general is likely headed.

Development cycle time

GGI asked respondents in 2002 how many products were in the RD&E backlog on average at any point in time, and the result averaged to 61, which was not inconsistent with 2000 when they answered under 100. The 61 products were arrayed across 20 different projects, as shown in Exhibit 5 on page 20. What may be more revealing is the reported rate of *completion* of projects and products over the year. Respondents in 2002 indicated an average of 87 products emanating from 47 projects over the course of the year. That means

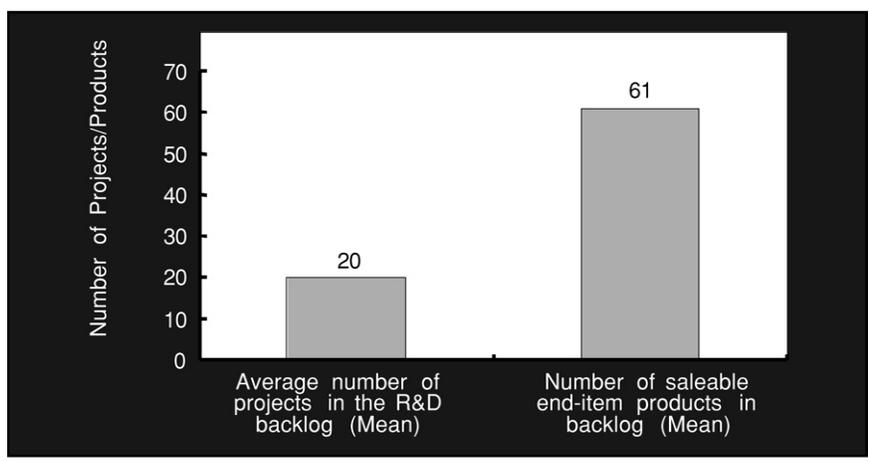
Exhibit 4: Results from the One-Step Process

	Milestone 1	Milestone 2	Cumulative
Rejected	N/A	22%	22%
Approved	N/A	78%	78%
Total Ideas	N/A	590/462	

SOURCE: Goldense Group, Inc.

A larger percentage of initial project ideas—78 percent—were approved by companies using the 1-step process.

Exhibit 5: Project Backlogs



SOURCE: Goldense Group, Inc.

An average of sixty one products in the development pipeline come from twenty projects in the pipeline at any given time.

That direction appears to be an increased recognition of the vital importance of a successful product development process with an accompanying interest in more deliberate management of that process.

Focused resources

Companies are increasingly likely to be more rigorous in their product selection process and are engaging more managers and ex-

ecutives in those decisions to assure quality. With a better focus of product development resources on the more carefully selected projects, higher quality products are flowing out of the product development pipeline in less time. This puts those companies that follow these practices ahead of their competitors, drawing to them greater revenues and profits that, in turn, provide the resources for more development. The key is effective manage-

ment of scarce resources and linkage of the output of those resources to corporate strategies and goals. Process improvement and efficient throughput are important indicators of direction. The most important decision is, of course, picking the right product. That is the business of the factors considered and the insight of the executive decision-makers. Perhaps some day there will be a consistent way of measuring and comparing companies in that space. ▲

References:

1. The first part in this series can be found in *Visions*, October 2003, on pages 20-12. It is entitled “Despite recent economic slowdown, cross-functional participating in NPD is increasing, according to study.”
2. 2.5-step is a variant where a very brief, typically one-page, proposal for the concept is documented and formally approved for allocation of resources to put together the more costly documentation required to obtain review and approval for the 1st stage of work.

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