

Trends in NPD

Despite recent economic slowdown, cross-functional participation in NPD is increasing, according to study

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The debate over cross-functional participation in NPD has raged ever since the NPD field coalesced within corporations decades ago. The Goldense Group looked at this question in a recent study and found some interesting trends.

Cross-functional participation in new product development (NPD) has increased significantly in many companies over the past decade, according to a study of product development practices recently published by Needham, MA-based Goldense Group, Inc. (GGI). The study, conducted in 2002, showed that from 1991 to 2002, NPD participation in key cross-functions—Quality, Manufacturing Engineering, and Purchasing—increased by 30 to 45 percent in the corporations surveyed.

The aim of the study was to ascertain levels of cross-functional participation and staffing ratios in new product development activities versus work supporting existing products. Our firm felt it was particularly appropriate to examine this issue in 2002, because, as the downturn in the economy has forced resource cuts across the board in most industries, companies struggle with effectively allocating those scarce resources between short-term and long-term needs. Businesses are squeezed to deliver short-term profitability, but at the same time must invest in the future by developing new products. The study shows how companies are balancing resources to meet business goals, with the involvement of the research and development department and the cross-functions.

Another important aspect of NPD the study examined was trends of cross-functional participation in NPD. Best practices have been pushed for many years, promoting cross-functional teams and early involvement of the non-engineering functions, in order to design and launch more robust products. With more cross-functional involvement, product designers can consider a broader set of issues earlier in the process, and the NPD process is shortened, speeding products to market.

Structure of study

Our 2002 *Product Development Metrics Survey* involved sending questionnaires to a

wide distribution of product development professionals in industry, in North America, Europe and Asia. Replies were received from 83 companies in wide ranging industries, making a broad array of product from industrial and medical to aerospace, defense, electronics, and chemicals. Respondents were asked to provide actual numbers of personnel in each function in their research and development (R&D) departments as well as in the cross-functions. They were also asked to estimate the percentage of time each group spent developing new products and supporting existing products. The 2002 survey was completed by respondents during July, August and early September 2002, and results were announced in early 2003. Discussion of the data is divided into two areas,



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cross-functions that support R&D were calculated and compared to the 1991 study, and are shown in Exhibit 1 on page 21. These staffing ratios are calculated by dividing the number of personnel in the entire development group by the number of people performing NPD in each function listed. A lower number indicates more participation from the cross-functional group, since the denominator accounts for the cross-function. Therefore a decrease in the staffing

ratio translates into an increase in NPD work by the cross-functional group, which of course is better.

Exhibit 1 shows that there was essentially no change in the staffing ratios of Marketing and Process Engineering from 1991 to 2002, with Marketing going from 4.9 to 4.7 and Process Engineering staying at 6.5.

The results from the Marketing function are not surprising, since Marketing is an “up-front” function whose involvement in NPD has not changed (and should not have) significantly in the past decade.

“Cross-functional participation in new product development (NPD) has increased significantly in many companies over the past decade, according to a study.”

covering staffing ratios and resource allocation for new product development (NPD).

Staffing ratios

A key element of the survey involved calculating staffing ratios for the cross-functions. Staffing ratio trends can be seen by comparing the 2002 results with those from Management Roundtable’s 1991 *Survey of Product Development Practices*. A staffing ratio is defined as a benchmark for resource allocation and capacity management. It is calculated by dividing the number of personnel in one function by the number in another, and expressing it as a ratio, for example 10:1 or 10.

Staffing ratios across industries for the

Increase in involvement

The three other functions showed significant change: More cross-functional involvement in NPD. These were Quality, Manufacturing Engineering, and Purchasing. Quality went from a ratio of 8.0 in 1991 to 5.4 in 2002. Manufacturing Engineering changed from an average of 6.0 in 1991 to 4.1 in 2002. And Purchasing went from 8.2 in 1991 to 4.6 in 2002. In percentage terms, this is

an increase of cross-functional NPD participation of 30 to 45 percent over the past decade. The best practices in industry promoting increased and early involvement of the cross-functions in the NPD process have been disseminated for many years and are now finally becoming evident, as these results show.

The relative staffing level to support new product development for the cross-functional areas of Marketing, Purchasing, and Manufacturing Engineering are 30 to 50 percent greater than those for the Process Engineering, Quality, and Production Test functions, as Exhibit 2 shows on this page. Recall that the staffing ratios are calculated by comparing the number of development personnel with the number of personnel performing NPD in the specified cross-function, and that a lower ratio translates to a higher amount of NPD participation by the cross-function. The staffing ratios for the first three groups ranged from 11.4 to 14.7, while the latter three ranged from 15.3 to 19.5. The first three functions have a greater level of involvement in NPD than the latter three, especially for the hardware-oriented companies that participated in GGI's study.

Resource allocation

GGI found that on average professionals in the development group spend 65 percent of their available time on NPD. This is as expected, since by definition the development department in a company has the primary responsibility for developing new products. This finding is consistent with our general experience in industry, where best practice companies often devote more than 70 percent of resources to NPD activities, while worst practice companies have less than 60 percent of resources dedicated to NPD. Cross-functions spend the reciprocal proportion of time on new products (34 percent) and existing products (66 percent) compared to development functions. This is logically consistent, considering that cross-functions have the prime responsibility to support all products.

Within the cross-functions, product marketing and management spend the greatest proportion of their time (54 percent) on new product development, as shown in Exhibit 3 on this page. All other cross-functional groups spend 26 percent to 32 percent of their time on NPD. The marketing function would logically spend more time on new products than existing ones. The time and effort required to bring new products to market far exceeds the time marketing would need to spend supporting existing products. The other cross-functions, however, are in general more focused on supporting products in the field, as the research verifies.

In summary, GGI found encouraging results regarding cross-functional participation in NPD activities. The cross-functions spend on average approximately one-third of their time on new products, and their NPD participation has increased from 30 to 45 percent over the past decade. With increased spread and application of best practices that encourage cross-functional participation, one can expect to see even more improve-

ments in this area in the future—a positive trend for new product development. ▲

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Exhibit 1: Cross-Functional NPD Staffing Ratios, 1991 to 2002

Cross-Function	"NPD STAFF" INDUSTRY AVERAGES			
	1991	2002	% Change	Participation Change
Marketing	4.9	4.7	4%	↔
Quality	8.0	5.4	33%	↑
Manufacturing Engineering	6.0	4.1	31%	↑
Purchasing	8.2	4.6	44%	↑
Process Engineering	6.5	6.5	0%	↔

Source: Goldense Group, Inc. (2002) and Management Roundtable (1991)

Cross-functional participation in NPD, shown by lower staffing ratios, increased from 1991 to 2002 in three areas—Quality, Manufacturing Engineering, and Purchasing.

Exhibit 2: Staffing Ratios—Total Developers/Cross-Function

Function	Total Developers/ Cross-Function
Product Marketing and Management	12.7
Purchasing	14.7
Manufacturing Engineering	11.4
Process Engineering including Facilities Engineering	19.5
Quality including Reliability Engineering, QA, QC	15.3
Production Test including Production Engineering	17.3

Source: Goldense Group, Inc.

Product Marketing, Purchasing and Manufacturing Engineering participate more in NPD than Process Engineering, Quality and Production Test, as shown by lower staffing ratios.

Exhibit 3: Time Spent on NPD vs. Sustaining Products—Cross-Functions

Function	% Time in NPD	% Time Sustaining Products
Product Marketing and Management	54%	46%
Purchasing	31%	69%
Manufacturing Engineering	31%	69%
Process Engineering including Facilities Engineering	32%	68%
Quality including Reliability Engineering, QA, QC	26%	74%
Production Test including Production Engineering	26%	74%

Source: Goldense Group, Inc.

Product Marketing and Management spends the most time on NPD of any cross-functional group—54 percent. The other cross-functions spend 26 to 32 percent of their time on NPD.