

Goldense Part III

When companies outsource R&D, the main focus is NPD, according to study

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In this part of their 2002 study, the authors examined outsourcing of the Research and Development (R&D) portion of the development process to see how much of it goes to New Product Development (NPD) versus sustaining engineering.

Almost all companies outsource some part of their research and development (R&D) work, but most do so at a low level of their total capacity, according to a recent study of product development practices by Needham, MA-based Goldense Group, Inc. (GGI). The study, conducted in 2002, found that when allocating resources 42 percent of companies give priority to new products over existing products.

The goal of the study was to assess current practices and the use of outside or contract services for R&D work and for sustaining engineering work. Outsourcing has been a hot issue lately, with global competition increasing cost pressures on industry and forcing companies to find the most cost-effective ways to develop and support their products. Companies are also feeling growing concern for protecting their intellectual property while leveraging their own core competencies.

Structure of Study

GGI's 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. Replies were received from 83 companies, in indus-

tries ranging from medical products to aerospace, defense, electronics, chemicals industries, and many others. Respondents were asked to estimate the use of outside contract services for R&D work and the total percent of R&D capacity outsourced.

They were also asked to describe practices and methods for resource allocation to support existing products versus New Product Development (NPD). The 2002 survey was completed by respondents during July, August and early September 2002.



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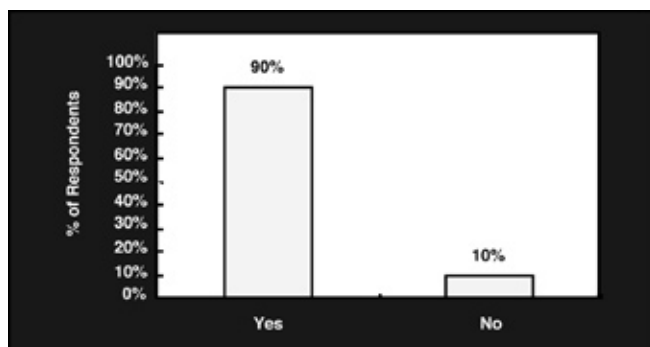
Most outsource some R&D

Ninety percent of companies outsource some amount of R&D work, according to the study, as shown in Exhibit 1 on this page. However, at the majority of companies 82

percent, only 15 percent or less of their total R&D capacity is outsourced, as shown in Exhibit 2 on this page. On average 10.43 percent of total capacity is actually outsourced. These findings suggest some reluctance among R&D groups to outsource a large part of R&D. This may be because design work is generally viewed as a core competency that they would be unwilling to have performed by an outside service. When companies consider, however, the need to manage capacity effectively and remain flexible and responsive to changing workloads, we believe they must be more willing to outsource this portion of their process.

Intellectual property may present a potential barrier to outsourcing R&D. If early design

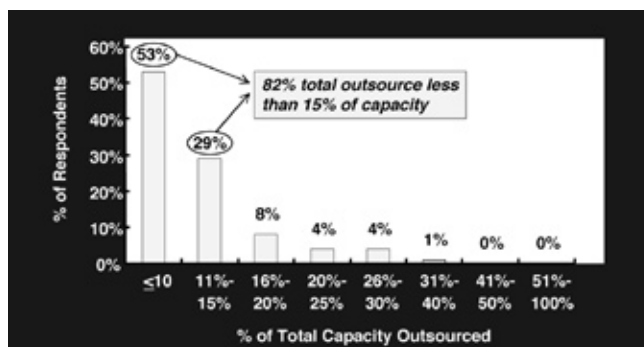
Exhibit 1: Percentage of Companies that Outsource R&D Work



SOURCE: Goldense Group, Inc.

Ninety percent of companies outsource some amount of R&D work.

Exhibit 2: Outsourcing as a Percent of Total Capacity



SOURCE: Goldense Group, Inc.

At the majority of companies—82 percent—only 15 percent or less of their total R&D capacity is outsourced. The actual average is 10.43 percent of total capacity outsourced.

work is performed by a contractor, the ideas or inventions that emerge are likely to be owned by the contractor. Many companies do not want to forfeit ownership of these new product ideas, which constitute valuable intellectual property and an important competitive advantage. Companies need to put outsourcing agreements in place and review them periodically to ensure clear understanding of ownership and other details of the relationship.

Where NPD fits in

Despite the barriers mentioned above, around 95 percent of outside resources performing R&D are devoted to New Product Development, as shown in Exhibit 3 on this page. Only five percent of outside resources perform sustaining engineering work, which is work to support existing products. We explain this by the fact that outsourcing sustaining engineering work is inefficient and creates a big drain on engineering resources. The detailed knowledge required to support existing products generally resides only within a company, and to transfer that learning to a contractor would demand a large investment of engineering time. In the end, this would be counterproductive, since the purpose of outsourcing is to reduce the burden on engineering.

This finding is supported by another result: 39 percent of firms view sustaining engineering as a profitable business and dedicate resources to it, as shown in Exhibit 4 on this page. Companies are keeping

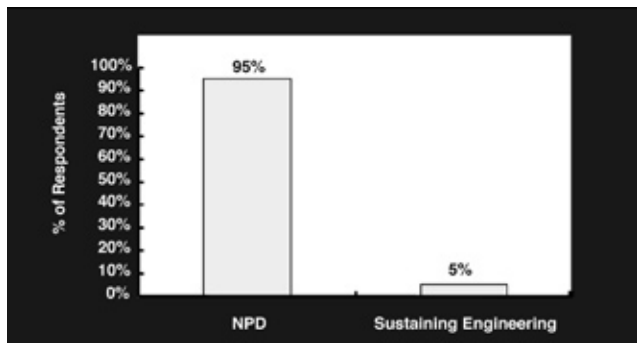
sustaining engineering in-house, which draws resources away from new products. Given the critical need to satisfy customers, it is not surprising that 53 percent of companies allow product support to take whatever resources they need to support existing products and allocate the remainder to developing new products, as shown in Exhibit 4 on this page. This may not be bad, if the company makes more money from existing products than from new ones. But many companies make more money on new products rather than existing ones and therefore must make

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deliberate choices in allocating resources between the two.

Examining the overall decision process for allocating R&D resources, Exhibit 4 shows different allocation practices that can result

Exhibit 3. Outside Resources Performing R&D Work



SOURCE: Goldense Group, Inc.

Approximately 95 percent of outside resources performing R&D are devoted to New Product Development, while only 5 percent of outside resources perform sustaining engineering work on existing products.

in outsourcing pieces of R&D work. Although 33 percent of companies report that their most common practice is to let product support take what resources it needs, more companies—46 percent—commonly protect NPD resources from interference by sustaining engineering either by prioritizing NPD equally with sustaining engineering (13 percent), giving new products priority (20 percent), or containing all of their sustaining engineering work in a dedicated organization (13 percent). When deciding how to allocate resources for R&D work, 42 percent of companies in GGI’s survey reported that they place priority on New Product Development and allocate the remainder to sustaining work, as shown in Exhibit 4 on this page. These encouraging findings suggest to us that companies are recognizing that new product development secures future revenue and are willing to devote the required resources first, and then consider the needs of existing products.

In summary, these days most companies are outsourcing only a small portion of R&D capacity—typically 15 percent or less. However, this focuses primarily on new products, while companies tend to make capacity available internally for sustaining existing products. Still, almost no sustaining engineering is outsourced. In the present environment requiring the need for quick turnaround in New Product Development (NPD), we predict that the portion of outsourcing devoted to R&D in NPD will grow in the near future. 📈

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Exhibit 4: Practices in Resource Allocation for NPD versus Sustaining Engineering

Practice	Priority on NPD	Practice Usage	Most Common
Sustaining engineering is a profitable business. We organize resources around these activities.	↓	39%	6%
Product support takes what it takes.	↓	53%	33%
Resources are targeted to sustaining and new products, equally prioritized to new products.	→	37%	13%
Resources are targeted to sustaining and new products, and new products take priority.	↑	42%	20%
Sustaining work is performed at significant levels outside the sustaining group.	↓	27%	10%
Sustaining work remains contained within the sustaining group.	↑	24%	13%
We outsource sustaining engineering.	↑	1%	1%
We do not sustain products, we replace them.	↑	1%	1%
Other	?	4%	2%

SOURCE: Goldense Group, Inc.

When allocating resources for R&D work, companies most commonly place priority on New Product Development and allocate the remainder to sustaining work.