NEW R&D METRICS STUDY BENCHMARKS PRODUCT SELECTION AND IP MANAGEMENT

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A 2004 survey of product development metrics benchmarked processes for product selection and Intellectual Property management, while also tracking corporate-level R&D metrics. The fourth biennial survey conducted by Goldense Group Inc. (GGI) found that product selection processes were becoming more complex and more formalized. Processes and tools for managing Intellectual Property – viewed as an important priority by respondents – were at a less mature stage of development. The study also found that, over the past decade, R&D metrics have become more prevalent and more visible at the higher levels of the organization.

Respondent Profile

Goldense Group Inc. developed a questionnaire targeting product development or R&D leaders at or above the departmental level. The questionnaire was distributed by mail, e-mail and handouts. A total of 5253 pieces were distributed, with 202 valid responses received, a response rate of five percent. Responses were validated through rigorous cross-checking and phone interviews.

Sixty-nine percent of the responses were from publicly-traded companies from such industries as aerospace/defense, automotive, chemical, consumer products and a number of others. Eighty-three percent of respondents were from within the target group – general management or R&D management positions; nine percent came from the marketing function. The respondents were fairly evenly distributed with respect to company size as measured by both annual sales revenue and number of employees.

Product Selection Process

The study classified product selection into "1-step," "2-step," and "2.5-step" processes. In a 1-step process, "a single top management meeting is held for a go/no go or table decision; a complete comprehensive plan/analysis has been prepared for consideration; and work leading up to this meeting has been conducted in functional organizations." In a 2-step process, "first a preliminary marketing and technical analysis is reviewed; the same top management group that makes the final decision performs this review, and, at this time, it is either killed, tabled, or moved forward for final estimation." This is then followed by the final decision-for-development review, as in the 1-step process. In a 2.5-step process, an initial step is added: "a simple, short…description of the idea is proposed; little work has been performed, if any (while) the idea is in a highly raw state; at this time, it is somehow killed, tabled, or moved forward for further analysis."

The study found that nearly one-half of respondents (47%) had the more rigorous 2.5-step processes, the highest percentage in the eight year history of GGI's survey. The research also found that the number of decision makers involved in the product selection process, as well as the formality of the process, varies with the number of steps involved – the greater the number

of steps, the higher the degree of formality, and the more decision-makers involved. Goldense Group Inc. researchers believe that the presence of additional decision-makers in multi-step processes indicates a higher level of cross-functional involvement in product selection decision-making. The research also found that the most widely used format for product selection was to have "a single council or steering committee" review and make decisions regarding new product ideas.

Product Selection Tools

The questionnaire presented respondents with a list of 21 product selection tools, such as Concept Engineering, Voice-of-the-Customer, Product Specifications, Proactive Risk Mitigation, and others. It then asked respondents to rate each tool on a scale of use (from "Never" used to "Almost Always" used) in three dimensions: the tool's use for "analyzing and/or documenting a proposed project/product before the point of approval"; its use for generating "innovative thinking and/or visible innovation"; and its use in helping to generate "copyrightable, trademarkable, or patentable IP."

Figure 1: Degree of Use of the Top Six Most-Used Product Selection Tool

Tool	*"Almost Always"*	*"Frequently"*	*"Once or Twice"*	*"Never"*
Product Specifications	47%	30%	3%	5%
Requirements Definition	43%	34%	3%	6%
Technical Feasibility Analysis	39%	34%	4%	5%
Development Cost Estimating	46%	25%	5%	10%
Target Costing	40%	28%	6%	8%
Market Definition	34%	36%	8%	6%

SOURCE: Goldense Group, Inc., Needham, MA, 2004.

Creating a "Product Specification" was the most frequently used tool for product selection. The top six tools – Product Specifications, Requirements Definition, Technical Feasibility Analysis, Development Cost Estimating, Target Costing, and Market Definition – were "Almost Always" or "Frequently" used by more than 70 percent of the respondents. On average, respondents believed that these tools only "Occasionally" helped to generate innovation. "Voice of the Customer," "Concepting/Concept Engineering," and "Technical Feasibility Analysis," were the tools respondents believed were most useful in helping to generate innovation. The survey found that these tools were considerably less likely to help generate IP. The top half-dozen tools that respondents believed were most helpful for generating IP were employed, on average, only "Occasionally." However, each one of the tools or techniques provided were felt to help generate IP "Almost Always" by at least one respondent.

The researchers point out that the tools most often used for product selection are the tried-and-true, older techniques that relate directly to the functional or financial aspect of the product's performance. The study also suggests that many companies have not yet taken advantage of well-known tools and techniques used for product selection that could also help enhance innovation and improve IP management.

IP Management Process

The GGI survey used essentially the same framework to track IP management processes that it used to gauge the maturity of product selection processes: the 1-step, the 2-step and the 2.5-step processes. The survey found that each of these IP management processes was used by about equal numbers of respondents. As with the product selection process, the number of decision-makers and the formality of the process varied with the number of steps involved. However, a single individual made the IP decisions in 20 percent of responding companies. There were, on average, one or two fewer decision-makers involved in IP management as compared with the product selection process. Forty-seven percent of respondents reported that an internal law department, aided by external councils, supported IP management; about one-fifth of the respondents had a part-time legal resource, supplemented by an external council. Importantly, two-thirds of respondents felt that IP will be "More" or "Much More" important in five years than it is now. Only one percent of respondents held that IP would be less important.

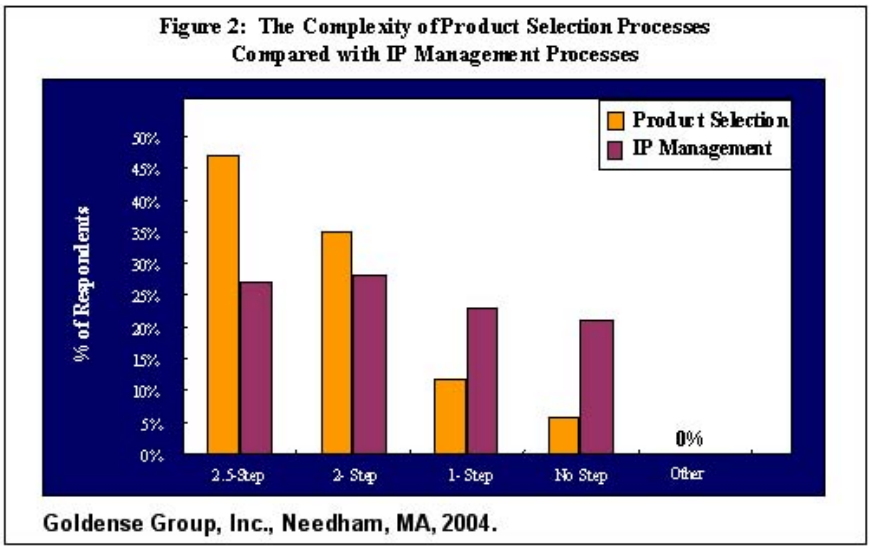

Figure 2: The Complexity of Product Selection Processes Compared with IP Management Processes

Goldense Group, Inc., Needham, MA, 2004.

The results led GGI researchers to the conclusion that, *"There is currently no known best practice for IP decision-making, in contrast with the product selection process…The result that more than half of respondents (55%) are reviewing potential IP at least twice…is a promising sign that many companies are giving serious consideration and attention to the IP management process. However, the IP management process still has a long way to go to match the maturity of the Product Selection process."*

IP Management Tools

The study also examined tools for managing IP from several different perspectives, including tools for registering internally-generated IP, tools for licensing IP from and to other parties, as well as tools for selling IP to third-parties. The survey found that 42 percent of respondents had "active" to "high" levels of documentation for registering IP; thirty-six percent had "moderate" levels of documentation, while 16% had an "undocumented" process. The percentage of respondents with "undocumented" processes rises to one-third with respect to licensing IP from

or to others, and climbs to almost one-half of respondents when it comes to processes for selling IP to third-parties.

The survey also discovered that the most common system used for managing IP inventory is an internally-developed spreadsheet used by more than one individual. The next most common scenario was an external council which managed and supplied all of the information, with no in-house automated tools or spreadsheets.

As in the case of IP management processes, the researchers concluded that IP management tools were in a relatively immature stage of development. The authors state *that "IP management and the protection of intellectual assets are emerging as key areas of product development, but clearly they have much potential to be used to a far greater degree than currently reported."*

Top Corporate Metrics Used in Industry

Goldense Group Inc., has been tracking metrics used in industry in each of its four, biennial surveys. The 2004 questionnaire presented respondents with 75 metrics, and provided a strict definition for whether or not a metric was "in use." Each of the metrics were found to be used by at least one respondent. The most commonly used metric, tracked by 78 percent of respondents, was "R&D Spending as a % of Sales." Other metrics, utilized by over 50 percent of respondents, include, "Total Patents Filed/Pending/Awarded," "Total R&D Headcount," "Number of Products/Projects in Active Development," and "First Year Sales of New Products."

Examining the data collected over an eight-year span, GGI's researchers concluded that, *"the penetration of metrics use…increased dramatically in 2004 over all of the past surveys…R&D metrics use continues to increase in companies involved in product development…as this field evolved to higher levels of practice in response to ever increasing world-wide competitive pressures."*

Summary

The 2004 GGI survey, the most statistically rigorous and most representative in GGI's series of studies, demonstrates the progress that has been made in the area of product selection. Processes for clarifying this fuzzy front end have shown progress in terms of their detail, their formality, and the degree of cross-functional involvement. Similarly, R&D metrics have increased in terms of usage and visibility over the past eight years. The researchers believe that the overall increase in metrics in use demonstrates that early experiments with R&D metrics have proven successful, with the top R&D indicators being used by an increasing cross-section of industry.

For the first time, GGI also benchmarked IP Management processes and tools. Not surprisingly, IP Management emerged as a relatively immature practice. Many companies are tracking internally-generated IP, but relatively few track licensing of IP to or from other parties or its sale to third-parties. While there is virtually universal agreement on the importance of IP, process innovation has not yet caught up with the emerging need. The study suggests that IP

Management represents an opportunity for leading-edge firms to move to the front of the curve.$^{K}_{R}$

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This research is available at www.goldensegroupinc.com/iStore/store.html