

# PRODUCT DEVELOPMENT

## BEST PRACTICES REPORT

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### NEW STUDY EXAMINES LINKS BETWEEN R&D, CORPORATE METRICS

Goldense Group Inc. (GGI) has released the findings of its second biennial study of product development metrics. Conducted this year, in association with The Management Roundtable, the study represents GGI's continuing efforts to gather data on, among other topics, the linkage between measurements of R&D performance and corporate-wide metrics.

The GGI study examined questionnaire data provided by 121 relatively advanced users of product development metrics. Based on this data, GGI has introduced an innovative, new metric: “% R&D Metrics in Company-wide Portfolio.” This calculation is an indicator of the degree of linkage between R&D and overall corporate strategy. It divides the number of *R&D-specific metrics* a firm has in its company-wide portfolio by the *total number of metrics* in the same firm's corporate metrics suite. The research revealed that R&D metrics comprised 17% of respondents' corporate portfolios. This suggests that for these firms, R&D has a high degree of visibility in terms of the enterprise as a whole.

#### *Key Findings*

GGI's findings are based on responses to a detailed, 12-page questionnaire. The questionnaire was divided into six sections: respondent profile, R&D linkages to corporate strategy, portfolio management metrics, product selection metrics, product success metrics, and R&D metrics used in industry. At the highest level, GGI's analysis revealed that...

- 36% of respondents had a clearly defined set of corporate-wide metrics used *to manage the company as a whole*.
- 37% of respondents had a clearly defined set of metrics used *to manage R&D*.
- 18% had no linkage between *R&D metrics* and *corporate metrics*, i.e., there were no metrics in common between these two sets of measures. 67% of the respondents had between one and five metrics in common between their corporate and R&D metrics portfolios. 15% had six or more metrics in common between the two.
- Time-to-market and target product cost were the two most important criteria respondents used to gauge financial success on any given development project.
- Companies report that, on average, 68% of their products are successful and 32% unsuccessful, based on their company's internal criterion for success.
- Across industry, in GGI's sample, the approval rate for R&D projects was 59%.

Also notable is what the survey found that the respondent firms were *not* doing:

- Among the respondents, there was no single predominant counting method used to determine the number of products in a company's product portfolio.
- 32% of the sample companies did not track product life cycles. Of those that did track them, the mean life cycle is greater than nine years in the primary area of business. 59% of

companies that track product life cycles report exclusively *decreasing* product life cycles.

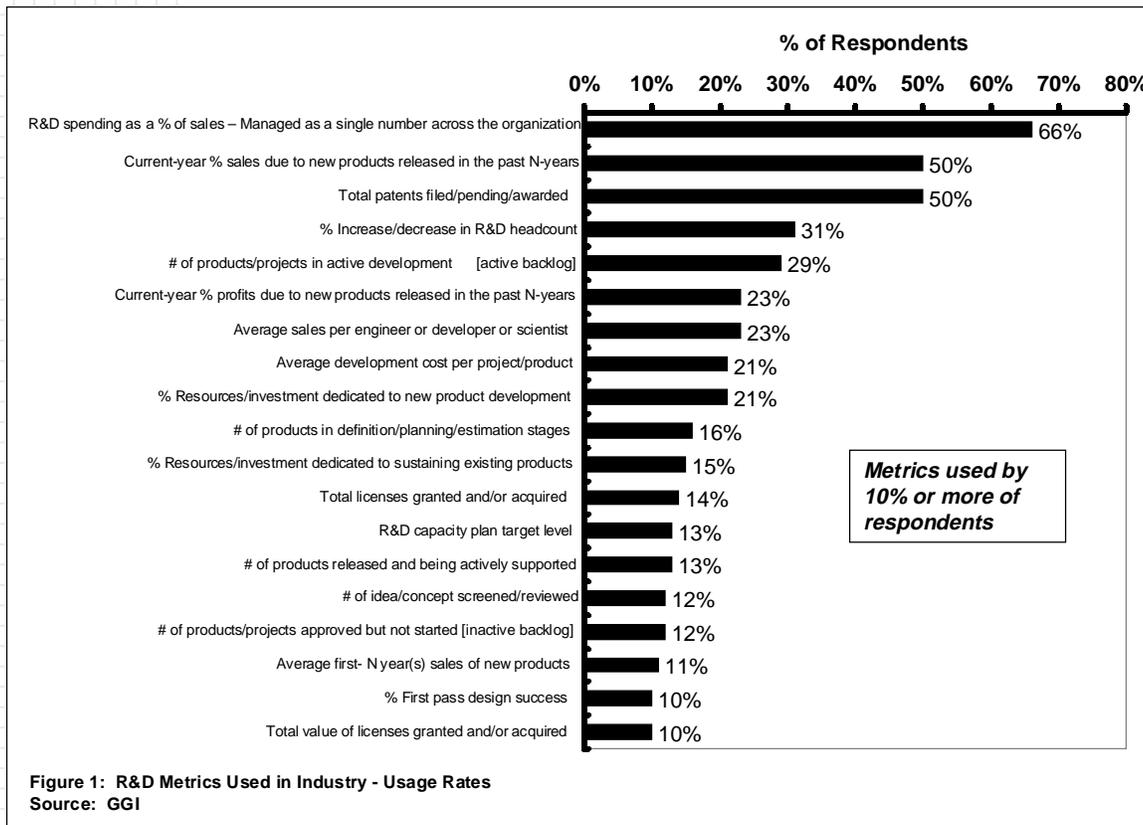
- Only 19% of the companies had an active product obsolescence and/or retirement process.
- Out of a list of almost 50 metrics provided in the questionnaire, only three were used by more than 50% of respondents.

**Respondent Profile: A Sample of Advanced Metrics Practitioners**

GGI’s study provides a cross-industry view of metrics as they are currently used by product development organizations. Over half of the replies were from seven industries: aerospace, automotive, consumer products, durable goods, electronics, industrial products and medical products. Two-thirds of the respondents were from public companies. 55% of respondent com-

panies had sales revenues of less than \$250 million and fewer than 1000 employees, with 45% having sales revenues greater than \$250 million and more than 1000 employees.

A majority of the companies represented in GGI’s survey database are relatively advanced practitioners of product development metrics.



They provide a snapshot of organizations that are maturing in terms of their use of process measurements. How and why did GGI come to this conclusion? Replies GGI President, Brad Goldense, “to gauge the maturity of a process we can look at models such as that used by SEI. The first three stages of this five-stage model move from ad hoc, unrepeatable methods, through a defined (but not necessarily consistent) process, to one that is consistent and repeatable. You can’t get to measurable until you get to repeatable. The fact that our questionnaire was asking about measures that are not project-based measures but overall corporate and overall R&D measures suggests that if a firm is able to provide detailed information about these areas we can conclude that it is at a relatively mature stage of development with respect to metrics...it has repeatable, measurable processes which is a hallmark of maturity.”

Goldense points out that 43 of the 121 respondents have a known, stated set of corporate-wide metrics. Another 60 said they could derive such a set. This means that 103 out of 121 respon-

dents said that they had a known, consistent set of metrics used to manage the firm. The conclusion reached was that the survey is a limited sample of firms displaying a relatively high level of maturity with regard to corporate-wide and R&D metrics.

### ***Highlights of the Study Findings***

GGI has provided the following highlights of the findings for each section of the survey.

#### R&D Linkages to Corporate Strategy

- On average, respondents had 16 *corporate metrics* in their portfolio. 50% did not have a clear, pre-defined set of corporate metrics, but estimated that about 30 metrics were used. 14% of respondents cannot identify a set of measures in use in their organization.
- On average, respondents had six *R&D metrics* in their portfolio. 38% did not have a clear, pre-defined set of R&D metrics, but estimated that about 12 metrics were used. 25% of respondents cannot identify a set of R&D measures in use in their organization.

#### Portfolio Management Metrics

- The “Product Family Model” was the predominant framework used by respondents for categorizing products. 82% of respondents use this model. The “Product Type Model” is used by about half (48%) of respondents. About one-third (34%) categorized their products by the size and/or complexity of the project.
- 59% of the companies that track product life cycles report exclusively *decreasing* cycles; i.e. no life cycles are increasing. 4% of companies report exclusively increasing life cycles. Product life cycles for the remaining companies are either stable, or have both increasing and decreasing dynamics.

#### Product Selection Metrics

- 35% of companies reported that time-to-market was the most important criterion for realizing financial success on any given development project. 33% indicated that target product cost was most important. Only 5% identified development cost as the most important. In 11% of companies the criterion changes from one project to another.
- 30% of respondent companies review a potential product idea more than two times before finally accepting or rejecting it. 33% review project/product proposals twice. 11% only review it one time. 14% report no formal process for reviewing project/product proposals. 12% report using other review/approval methods that are not measured by the number of pre-approval/reject reviews.
- Respondent companies with traditional “One-Step” product selection processes approved 64% of all projects/products proposed. Respondent companies with “Two-Step” product selection processes approved 62% of projects/products proposed at the first selection milestone and 67% of projects/products proposed at the second selection milestone. The “net yield” for “Two-Step” processes is 42%.

#### Product Success Rates

- About one-third of respondent companies *do not use quantitative financial criteria* to evaluate product success or failure. Of the companies that *do* measure product success quantitatively, 17% report using several different criteria. These two approaches account for 50% of all companies in the study. The other 50% use specific financial measures. ROI is the

most popular at 13% followed by IRR at 8%, Payback at 6%, NPV at 5%, BET at 3%.

- About one-third of respondents did not use *predetermined time periods* to evaluate product success or failure. Among those companies that do use predetermined time frames, the most frequently used period is five years. One-year and three-year time periods are the next most common.

#### R&D Metrics Used in Industry

- The questionnaire listed 48 common R&D metrics, and asked respondents to indicate those used in their company. Three metrics, “R&D Spending as a % of Sales,” “Current Year Sales Due To New Products,” and “Total Patents Filed/Pending/Awarded,” were used by more than 50% of companies. “% Increase/decrease in R&D Headcount” was used by 31% of respondents. The metric “# of products/projects in active development [active backlog]” was used by 29% of companies. None of the remaining 43 metrics were used by more than 25% of this sample.

The metric popularized by 3M, “Current Year Sales/Profits Due To Products Released In The Prior N Years,” is the only R&D metric developed in the last fifteen years to gain widespread industry acceptance.

#### *On-going Research*

GGI plans to continue its research every two years into the foreseeable future. As metrics systems mature, GGI expects to see the integration of product selection and portfolio management processes into a single, analytical, real-time process. In other words, as a new product is proposed, the *effect* of that product on the portfolio will be analyzable in real-time. GGI also expects to see the emergence of several frameworks that facilitate the dynamic alignment of R&D investments to company business strategy. This will result in more projects “dying on the vine” in mid-development. In the future, in more tactical and operational contexts, GGI expects to see an increase in the consistent monitoring of detailed demographic information about new products. Companies will know the life cycle of every product, the reliability growth, the extensibility, the cost reduction potential, and the revenue/profit curve (to name just a few demographics) for every product it undertakes. Says Goldense, “*we expect the height of the management analysis ceiling to rise and the management analysis floor to become much finer.*”<sup>P<sub>D</sub></sup>

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#### Editorial Staff

##### Alex Cooper

Publisher  
alex@roundtable.com

##### David Vermette

Editor in Chief  
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