The
MANAGEMENT
ROUNDTABLE

WHAT IS THE CURRENT STATE OF METRICS INFORMATION SYSTEMS?

In the lead interview, Paul Adler speaks of centralization of information technology as one potential component in promoting an "enabling discipline" in the product development competency. If this viewpoint is true, one might expect to see a growing trend toward centralized, global information systems. Such a trend is visible in some quarters with the growth of Product Data Management (PDM). But, overall, *what is the current state of information technologies in product development*? For example, are product development metrics tied into a centralized system? Is the collection of metrics data automated, or manual? And how does your company compare with industry benchmarks?

We asked Brad Goldense, President of Goldense Group Inc., [GGI, Needham, MA] and BPR columnist, to mine his metrics survey database (See *"The Latest on Product Development Metrics,"* BPR, December 1998) and provide us with some benchmarks on the current state of metrics information systems.

Degrees of Automation and Centralization in Metrics Systems

GGI's data, based on a 1998 survey of 190 product developers, suggests that, according to Goldense, *"metrics information systems are at an early phase of maturity. As a rule, the collection and input of metrics data is still manual or only partially automated. The largest number of our respondents described their metrics systems as 'decentralized' or 'ad hoc'. We also found that, in most of the companies surveyed, metrics are not collected as a continuous process. They are gathered on an occasional basis, to meet deadlines, for example, for monthly or annual reports."*

What numbers led Goldense to these conclusions? Asked to indicate the level of centralization of metrics systems, almost half of the respondents claimed that they had either "a number of unlike systems" or "unlike systems unevenly applied and utilized." When asked to indicate the "state-of-automation" of their product development metrics system, only 7% described their system as "Fully automated," while 39% described their system as "Partially Automated." By far the greatest number (54%) of respondents reported a "Manual System. *"The respondents seemed to indicate that the main vehicle for metrics reporting is the presentation slides used at meetings. Commonly metrics come in from a file folder, and are assembled in a presentation format as discrete data points, and not as a system"* says Goldense.

It would be logical to assume that the degree of maturity of information systems varies with industry and with company size. GGI analyzed the data for each industry segment and for different groupings of respondents based on the number of full-time employees. With these numbers, a Metrics Systems Centralization and Automation Index was calculated for the seven industries with the largest number of respondents, as well as for groups based on numbers of employees. *Figure 1* displays the results of these calculations.

As expected, the level of automation and centralization is in direct proportion to the number of full-time employees. Integrated, automated systems were most prevalent in the Aerospace/Defense and Automotive industries, developers of "big-ticket" products with high levels of complexity. On the other hand, companies in the medical field reported less automated and centralized systems. 55% of these firms reported that they possessed the lowest levels of centralization, as defined by GGI's

questionnaire. 50% of these same developers described their state-of-automation as either "manual system results from professionals sending in data ad-hoc, and/or as it occurs" or "manual system results from administrators tracking down professionals for numbers".

Surprisingly, higher tech firms (respondents in the Aerospace, Communications, Computers, Software, Defense, Medical Products, Research/National Laboratories, Semiconductors and Telecommunication industries) reported *lower levels of centralization* in metrics systems when compared with lower tech organizations. Among higher tech companies, 57% reported that they had "a number of unlike systems," or "unlike systems unevenly applied and utilized," the two lowest levels of centralization, as compared to 42% of lower tech respondents. *"One reason for this is that higher tech companies tend to move at a faster pace. Also, in these firms, management values and principles for periodic control points are at a lesser standard than in low tech companies. Higher tech people tend to be caught up in technology and, generally, there is a higher level of* technical *than* managerial *maturity in these organizations,"* says Goldense.

Who Collects Metrics…and When?

In addition to its findings on metrics systems architecture and automation, GGI's survey also collected data on *who* manages the gathering and reporting of metrics data. The survey found that, in most cases, it is the functional leader of development or engineering and his/her staff who performs the task of gathering and maintaining metrics. In other cases, it falls to a more senior manager for whom measuring product development is just one among various other management tasks. Despite the prevalence of project teams, product development measurement is still localized within a functional group. This is consistent with Goldense's view that the "Concurrent Product Development" approach has not realized a fraction of its full potential.

GGI also gathered data suggesting that development leaders are not optimizing the cycles of measurement to the natural rhythm of product development projects. In general, numbers are gathered on a "monthly" or "quarterly" basis. They're tied to historic company measurement practices, (typically on a monthly or weekly cycle), and not to project milestones; measures are tethered to ongoing operations rather than to the points proper to product development. Says Goldense, *"Companies are not measuring projects on a periodicity optimized for product development, i.e. at the major project milestones, whenever they might occur. We discovered that they're still utilizing historic timeframes that are more suited to finance or corporate-level metrics."*

How would Goldense summarize GGI's findings on the relationship of metrics and IT?: *"Product development measurement systems are where manufacturing measurement systems were in the early 1980s. Today there are only five measures commonly used by more than 50% of companies in industry. In 10 - 15 years we would expect to find one to two dozen metrics used by more than 80% of companies. Most measures today are generated with an accounting mentality – they capture what has already happened – but, like manufacturing, the centroid of the measures will move from reactive to proactive or predictive* (see Brad's column "Metrics Macrotrends" below). *As in the manufacturing function, as the number of measures in common grows and the way of measuring them becomes standard, we expect to see a shift in product development metrics from measuring 'what happened' to predicting what 'will happen.'"* Goldense expects that this maturation phase will be accomplished sometime around the year 2020. **P**_D

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