

The State of Systems, Tools, and Metrics to Manage Capacity

By

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The maturation of resource and capacity management processes are proceeding slowly, according to a survey conducted by Needham, MA-based Goldense Group, Inc. (GGI). The aim of the study was to assess developments in capacity management systems and tools and research and development (R&D) measurement practices. The study was conducted among a wide distribution of product development professionals in the medical products, aerospace, defense, electronics, and chemicals industries in North America, Europe, and Asia. Respondents were asked to provide the frequency of their organization's R&D metrics reporting, as well as the definition and size of their R&D metrics set. Respondents were also polled regarding their use of various systems and tools to manage resource and capacity planning.

Over half of those surveyed report their R&D metrics at least monthly, but only slightly more than a third have a clearly defined set of R&D metrics. Additionally, the spreadsheet is still the most common tool for capacity management, but results show trends toward more integration and automation of capacity planning systems. When performing high level resource and capacity planning, 22 percent of companies use an architectural model, 28 percent use a size model, and 50 percent use no abstractions.

Findings

According to results of the survey, 55 percent of participating companies reported R&D metrics at least monthly, down from a previous GGI study that found 65 percent of companies reviewed metrics at least monthly. GGI attributes this decrease to be a reflection of difficult economic times – a key driver in the reduction in the number of people assigned to tracking and analyzing R&D metrics – resulting in longer review periods. The lack of standardization of measurement systems and metrics sets would also tend to limit the resources assigned to this activity.

The spreadsheet, with no underlying project system, is still the most common tool for capacity management. 29 percent of the companies surveyed use this method, which indicates that many firms are not linking automatically to project management systems and probably must perform this manually. Some improvements have been seen since the initial study in 1998, particularly in the area of process automation using custom-developed software applications and multi-project management systems. The current survey reported 17 percent of participants using fully automated systems, up from 7 percent in 1998. This encouraging trend indicates some maturation of product development support systems.

Additionally, 47 percent of the respondent companies optimize for resource planning, which assembles project backlog into an aggregate total of resources needed; 20 percent optimize capacity over multiple time periods; and 33 percent didn't know which optimization capability best described their system. These results highlight the difficulty and complexity of effectively managing resources *and* capacity. An analogy to this situation in the manufacturing discipline is factory loading and throughput using ERP systems. Full integration of this activity still has not been achieved, despite great progress in automating ERP systems. The 20 percent of respondents who optimize capacity most likely use home-grown programs that automatically link spreadsheets or customized programs, since the existing project management systems only address resource allocation, not capacity optimization. Still, this level of capacity optimization signals that the R&D community is beginning to focus on the importance of planning for optimum use of resources.

Two-thirds of the leading companies surveyed use metrics – whether clearly stated or readily derived from project management tools – to measure and direct all their R&D efforts. Similar results were also found in the size of the metrics set. In both the previous and current studies, the stated set was smaller than the derived set, which suggests that stating the set leads to more efficiency and clearer focus on key data.

In summary, project resource planning tends to be done with little abstraction and more focus on hard data. The implications of these findings highlights the progress that has been made, but there still exists a great need for more automated, integrated tools to aid in resource and capacity management.

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Goldense Group Inc. is a consulting and education firm focused on process and technology integration between product strategy, R&D, design engineering, product development, manufacturing, and materials management. In addition, GGI offers strategic workshops on the innovation process, measuring R&D performance, and intellectual property protection. For more information on the results of the above survey or for similar studies, go to the GGI Web site at www.goldensgroupinc.com.