The Society of
Concurrent
Product Development

Volume 15, Number 3
Spring 2007

Concurrency

www.scpdnet.org

SCPD: Integrating Strategy, People, Process, Tools, and Technology

Concurrent Practices

The Basis of Today's Best Practices

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Today's Best New Practices are Based on Concurrent Practices

In each new decade, industry looks for fresh ideas to improve the product development process. Many view Lean Product Development and Design For Six Sigma as today's Best Practices. While important and useful tools, these techniques are largely based on the underlying principles of Concurrent Engineering and Concurrent Product Development. Additionally, concurrent practices have allowed us to get our development processes under control, thereby allowing us to try new management techniques as they are developed.

A Historical Perspective

The traditional approach to product development is based on the Frederick Winslow Taylor Assembly Line Principle. In the years just before 1920 Taylor was hired to go to Detroit and streamline the way workers were trained.

By separating the marketing, engineering, and operations functions and inducing specialization, Taylor created disciplines in which people could be trained quickly and supervised efficiently. Sequential practices sustained this approach for nearly eight decades.

As worldwide competition heated up in the 1980s, however, Western industry needed to speed up its design-production cycle. For a short period, companies used Rapid Sequential Development to catch up. Within five years even this was not enough, and the concept of Concurrent Engineering emerged.

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Today, progressive companies use concurrent practices in their design and development functions. These practices involve key stakeholders in a variety of engineering disciplines as well as cross-functional stakeholders from marketing, product management, purchasing, manufacturing engineering, production, and quality. Even companies with no engineers build cross-functional product development teams using the biologists, nutritionists, chemists, and physicists on their staff. Concurrent is the key.

Concurrent Engineering Practices Yield Results for Product Development

One reason that the Goldense Group, Inc. [GGI] put its name behind the SCPD is because the Society embraces the fundamental change from the Assembly Line process to a more efficient development environment. And, it scales completely to all virtual and global philosophies and practices. It is the basis of most modern management sciences, and systems, involving people. It is also culturally friendly. Only a few cultures remain where hierarchy and status is more important than getting the best results.

For example, researchers now employ the tools of the Stage-Gate® Methodology introduced in 1986 by Robert Cooper[1]. An approach that makes product development more effective, Stage-Gate uses a predetermined number of steps or "gates" to take a new product idea from the concept stage through to product launch. Each step includes cross-functional and parallel activities that must be completed before the project moves to the next "gate." This Methodology is used by approximately 80% of all global companies.

One indicator of the success of Concurrent Engineering and the Stage Gate Methodology is the recent emergence of a metric that measures First Pass Success. Traditionally, three to six attempts were required to get a new product to market. **With their mastery of Concurrent Practices, however, companies can sometimes develop a new product in a single pass.** Stage-Gate® results are best when the people that take projects and their related products through the stages and gates working concurrently.

The Hidden Cost of Poor Requirements

While Current Engineering and Concurrent Product Development have brought many improvements in the past 25 years, there are still large opportunities for improvement on the front end of product development and on the back end of product development.

In 1988, Don P. Clausing and Dr. John R. Hauser published an article on Quality Function Deployment in Harvard Business Review[2]. Hauser's QFD tools were met with many opinions, but even critics agreed that unless you got the set of product requirements right at the beginning, everything else you did through the houses of quality would be based on flawed assumptions. And this is a classic description of a Type One Error: the most expensive mistake a company can make. Many management scientists started to take a close look at requirements.

In 1990, Ashok Gupta published an article in the *California Management Review*[3] showing that 71% of everything that goes wrong in product development can be attributed to poor requirements. And even if that estimate were cut it in half, it is still a compelling statistic. This report had such an impact on industry leaders

that Motorola, Corning, IBM, and Northern Telecom started working on the "Fuzzy Front End."

Since 1992, Hewlett Packard has become a classic example of a company that has gotten it right. It understood the importance of the Fuzzy Front End and put a formal definition process in place. It established active gathering requirements. And it looked at all of the features a customer could want, then concentrated on that subset that it could do best when building a product. It separated the acts of requirements gathering and definition from product specification.

Prior to 1990, the decision regarding which new product ideas to pursue involved a single-step process where estimates of requirements would bubble up from lower functional areas. People would then meet and use a single decision point for their go/no-go choice. GGI began researching how companies perform all up front activities prior to Project Approval, and the measures that are used to make decisions.

By the late 1990s, GGI had contributed to the now industry-accepted Best Practice of a formal 2-1/2-Step selection process[4]. Companies now capture the Concept or "light bulb" of a new product idea. They then fund a Definition activity and, finally, they look at what they thought the numbers would turn out to be and make a conclusive Development Go/No Decision. While 35% of companies still aren't at the first step of "capturing the light bulb," most of industry (about 82%) is using some form of 2-1/2 Step process. It has achieved about the same penetration as Stage-Gate®.

The back end of product development is no different. Evolution of practices and knowledge is growing rapidly. There is as much to write as there is on the front end. It suffices to say that "Development Processes" are old generation and "Commercialization Processes" are what it is all about. Industry invests in new products to reap the rewards. Once again, Concurrent practices underlie the best practices of commercialization. If commercialization functions become concurrently engaged shortly around the prototype activity and are in full swing in beta test activities, product launch success increases. The key is that they interact concurrently with development.

Finally, for completeness, many companies have opportunities in the middle of their processes to get big gains. The common theme across industry here is the set of activities that will result in "First Pass Success Rate." Concurrent practices after Development Go/No Go decisions greatly increase the likelihood.

Tolerance for Risk and Quintiles of Adoption

Some firms are willing to accept a high failure with new products as long as some succeed. Certain divisions of Abbott Laboratories are prime examples of businesses that prosper on a "home run strategy." Not too many management teams have the stomach for a complete long ball strategy. Success rates can be 10-40%. The ability of these types of companies to tolerate that amount of failure is amazing, but everyone knows that a few long balls will keep them prospering.

In general, failure rates range from two out of every ten products to nine out of every ten. On average, 40% of all new products fail across industries. In the high-tech and consumer products market the number is 90%. Whether you view this as a good number or a bad one depends on your corporate strategy.

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Management teams drive business and product strategy. They also drive management process and systems strategy. Propensity for risk is still an ever-present consideration. Early Adopters are quite different than the Last Quintile. The early adopters of Concurrent practices were the titans of industry in the 1990s and remain so today. Others that now try to emulate them would be well advised to incorporate the full underpinnings of the practices that industry admires today.

The Quintiles stack up as follows:

- The 1st Quintile "Bleeding Edge" folks. This group is in the top three percent of industry. They are the companies that the rest of us watch see if they "fall off the cliff." If not, the Leading Edge companies quickly adopt their methods.
- The 2nd Quintile "Early Adopter" folks: the Leading Edge Companies. These folks and the 1st Quintile folks are the most likely to be the leaders of their industries.
- 3rd Quintile: This group is definitely composed of more conservative companies, but not highly conservative. They want to make sure that a methodology works in several industries before they adopt it. These companies have opportunity for competitive advantage through processes.
- 4th Quintile. These organizations do take the time to make their own systems and processes. They wait for the software package and install the solution. Companies in this group have little chance for competitive advantage, as their chosen tools and systems are also available to their competition.

5th Quintile. These folks do not even recognize the need for improvement in their product innovation process, or the fear of change is paralyzing. They are generally absorbed during periods of market rationalization

Conclusion

Despite its long history, Concurrent Engineering is a body of knowledge that should not to be taken lightly. When it was first developed in the 1980s, Concurrent Engineering represented a fundamental move away from the "Assembly Line" mentality. By involving key stakeholders from throughout the company, organizations can more accurately determine product requirements and more efficiently move new ideas through the product development process. With more control of their processes, they are also better positioned to explore new management tools that could give their company a step-up in the global marketplace.

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Bradford L. Goldense *NPDP, CMfgE, CPIM, CCP is the Founder and CEO of Goldense Group, Inc., Needham, MA. Brad retired from his role as SCPD President in June 2006 after leading the organization through the first half of this decade. Brad became SCPD President following many years of service as co-founder and President of SCPD's Boston Chapter, the Society's largest. Among Brad's many accomplishments as SCPD President were the strengthening of the society's infrastructure and management processes, promoting the continuing development of the SCPD web site, promoting the Body of Knowledge for concurrent practices, creating a well-qualified Advisory Board, and changing the name of the Society from Society of Concurrent Engineering to Society of Concurrent Product Development which more truly reflects the cross-functional nature of this profession. Brad will continue to contribute his experience and insights as a Board Member*. For more details visit **www.goldensegroupinc.com**.