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# Team Tactics Can Cut Product Development Costs

Clint Larson

*Honeywell has used a "team" approach to slash production costs and reduce the time needed to launch new products.*

**W**hen Honeywell's Building Controls Division replaced a sequential approach to product development with a team approach, the division abandoned a three-inch-thick volume documenting product development procedures in favor of a twenty-page guideline. The effect on the company's average product development cycles was nearly as dramatic: They were reduced from two to three years under the old methods to fourteen months.

In another division, employees from multiple departments have been cross-trained in each other's responsibilities and grouped into work teams of twelve to fifteen people. The results: In 1984, teams from the Industrial Automation Systems Division reduced cycle times by 30 percent; through 1985 and 1986, they shipped 99.6 percent of all orders on time while these teams generated \$11.1 million in cost savings.

In the company's defense and marine systems businesses, engineering, production, quality assurance, materials management, and program management jointly author "design to production transition" plans to minimize risks in critical stages of defense-related programs.

forging tighter links among those in product development and production. To remain competitive, manufacturing organizations must be quick to respond to customer requirements and first to the market with products for well-defined needs.

Two pressures have caused manufacturers to be both fast and first. One factor that has sped product development is specific customer demands. For instance, the U.S. Army has decreed that no development project may take more than four years. Therefore, the company's defense-related businesses have integrated design, testing, and production more tightly. Program managers form design-to-production transition teams that include representatives from engineering, production, quality assurance, and materials. Where possible, team members share quarters during any program to encourage "interfunction" communication. Team interaction helps shorten program cycles by reducing rework and specification changes. As a result, manufacturability and testability, as well as customer requirements, are designed into products and systems from the start.

The other factor forcing faster product development is simply the pace at which advances in technology drive new product introductions. For products incorporating solid-state electronics, the time spans within which new products can be successfully launched are growing shorter. Suppliers who fail to compress product development cycles will either miss opportunities or bring to market mere "me

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## Benefits of Team Tactics

The need to stay competitive in global markets is the principal motivation for

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THE JOURNAL OF BUSINESS STRATEGY September/October 1988

too" products. Those who succeed, however, win the opportunity to gain market share, command premium pricing, or both—until the competition catches up.

In the company's Building Controls Division, a change to a team approach to product development has enabled the division to cut the time from "concept to carton" by 50–60 percent. In addition, the number of hours devoted to specific projects was reduced by 5–10 percent. Improved communication among team members has resulted in fewer changes to new product specifications; this has eliminated much of the rework that lengthens product development cycles.

The reduction in changes and rework is achieved in part through an emphasis on the front end of the product development process. Through disciplined planning, team members produce a "frozen spec" that, once agreed to by the team, can only be changed by a "no go" decision based on a major shift in the market's requirements. The team itself enforces the discipline necessary to defer small design changes to a second issue of the product under development.

In addition to shortening the product development cycle, the process of arriving at a stable product design also benefits product manufacturability, cost, and quality. Getting production involved in the product development process from the start focuses the development team on designs that are compatible with existing manufacturing processes. It also enables the team to identify any hurdles in the early stages that will affect product cost, performance, or delivery.

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## Reduced Product Costs

The reduction in the development cycle itself results in cost savings. The Building Controls Division estimates the shorter cycle cut 5–10 percent from product development costs. More significant, however, is that the team approach and the "frozen spec" reduce the risk of design cost overruns. The communication among

functions leads to earlier identification of potential problems, which can then be resolved at lower cost in earlier stages of the product development process. The early involvement of production in the product design process also facilitates design for automation, which can result in substantial cost savings once a new product is in volume production.

Finally, team development and production tactics also benefit product quality and increase the chances for the success of new products in the market. Product quality benefits from the cross-training and improved "interfunction" understanding that team approaches require. For example, after cross-training, the members of one division's work teams report a much better grasp of how individual job performance affects both the performance of other team members and the quality of the final product. A test technician, for example, said that after being cross-trained in the assembly of the product she tests, she has a better understanding of what to look for and is better able to isolate problems. Through 1985 and 1986, the first years that this division's work teams were in full operation, team products were 97.6 percent defect-free.

Though harder to quantify, team tactics can also enhance the performance of new products in the market. This results from several by-products of the team approach. First, by shortening product development lead times, team tactics help business units hit their target product introduction dates more precisely. Second, the cost savings that the team approach delivers also help businesses hit their product cost targets more accurately.

Third and perhaps most important, team tactics tend to deliver products that truly meet customer requirements; thus, they are more enthusiastically received in the market. As part of the process of developing specifications for a new product, the team decides the basis on which this product will compete. Although all products are expected to compete on overall quality, the team determines the product's other points of difference: cost,

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**“Team interaction helps shorten program cycles by reducing rework and specification changes.”**

**Team Tactics: The People Issues**

The downside risks in the team approach to product development and manufacturing stem primarily from people and organization issues. Here are some considerations to help make the team approach successful:

- Organizational parity is essential.** Operating functions have to be seen as individually important and equal. In our company's case, we had to make sure that our engineers could participate equally with team members from marketing and manufacturing. Marketing had to learn to share the decision-making process for specifications with individuals from engineering and manufacturing.
- Good upfront marketing research is also essential.** There is a tendency to want to cut this part of the process short. But the product development team must be confident in the "frozen specification."
- Use technical gurus as individual contributors.** They usually do not like committee activities, but their skills are essential to the organization. In our division, they are set up as

staff consultants to several teams and are allowed to operate more independently.

- The rules must be kept simple.** Challenge traditional procedures. Management should emphasize attainment of schedule milestones, not time or dollars spent.
- Provide team recognition and support.** The team must be given the responsibility as well as the authority to take the project to a successful completion. Consider appointing a high-level champion to support them. Recognize team accomplishments at the conclusion of projects.
- Encourage calculated risk taking.** Remove threats of reprisal or punishment and build an atmosphere of trust.
- Keep communication channels open.** Communication must happen freely, up and down the organization, so that all team players feel informed and involved in "big pictures" issues, as well as the project's status.

—John C. Bailey  
Vice President and General Manager  
Honeywell Building Controls Division

technological superiority, price performance, etc. This consensus on the product's competitive positioning keeps the team focused on customer requirements throughout the development process.

The agreed-on product positioning also becomes the ultimate determinant of decisions that affect the new product's design and production. As the team develops specifications, product positioning provides a means to analyze and evaluate the inevitable compromises that the development process will require.

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## Overcoming Tradition

Team-based approaches to product development and production do not necessarily require significant capital investment. Teams will benefit most from access to computer systems that enable them to simulate the performance of par-

ticular product designs or to analyze the appropriateness of particular manufacturing processes. However, greater challenges to implementing team-based tactics are posed by the organizational and management styles of U.S. companies.

For instance, inherent in the traditional marketing-to-engineering-to-production sequence are repetitions of requirements definitions, product specifications, and production plans. Team tactics, by contrast, favor taking the time, through dialogue among various operations, to arrive at a consensus definition of a new product before proceeding to the development of product specifications.

The essential difference is this: The traditional approach builds in time to do everything over. The team approach builds in time to develop a design agreeable to all parties in one pass. This process may require as much elapsed time as the repetitive one that is traditionally employed. But team members approach the

product development task armed with an improved understanding of the customer's requirements. Team members are also aware of how their respective functions can contribute to satisfying those requirements. As a result, product development time is applied more to value-enhancing activities (a more thorough definition of requirements, a more thoughtful design, a better-managed transition to production) and less to wasteful rework made necessary by poor requirements definitions or by the development of designs that do not satisfy requirements or that cannot be produced with available resources.

The segregation of operations, which is typical in most U.S. companies, adds to the inefficiencies of the traditional approach to product development. Team tactics, on the other hand, encourage impromptu communication among team members throughout product development and the transition to production. In the company's Building Controls Division, one current project team has carved out its own open office area with a conference table at its hub to facilitate informal give-and-take among team members representing all functions.

### A Shift in Style

Although physically grouping team members helps foster the communication necessary for successful team efforts, it is also necessary for management to establish organizational parity among operations functions. Marketing, engineering, and production each have to be seen as individually and equally important. Degrees of involvement and, to a certain extent, leadership roles must be allowed to vary with the demands of the project. Marketing may take the early lead in a project, but as it evolves, will share responsibility for decision making on specifications with engineering and manufacturing. This typically requires some change in management style.

Finally, for team tactics to truly work, team members must first be trained in the required skills, then they must be trusted to act in the company's best interest. Training in both specific skills and organizational development techniques has to be provided so that team members are sufficiently equipped and empowered to make the decisions necessary to achieve project milestones. Trust must be created so that team members feel secure to take the calculated risks required to achieve project goals. A champion from the ranks of senior management is sometimes assigned to specific teams to help build both the level of trust and the sense of control necessary for success. Special effort should also be made to recognize teams at the conclusion of their project (including projects that are aborted because of a team decision that a specific effort would not prove feasible).

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Team tactics are a key factor in making manufacturing a competitive advantage for our company, as well as for other U.S. businesses. When combined with the expanded use of simulation tools and design-for-automation techniques, team tactics offer a powerful formula for continuing improvement in product development efficiency. Ultimately, team tactics create more challenging and meaningful work—the type of work that attracts committed and energetic employees essential to any company's success.