

Redesigning a technical organization for high performance

Participative management at Champion's Technical Center shows that a sense of common vision and commitment has created an energy and momentum of its own.

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Almost unknown to the pulp and paper industry a decade ago, the terms "participative management," "high-commitment workforce," and "team concept" are today well understood. Most greenfield mills today, such as Champion's Quinnesec hardwood kraft pulp and paper mills and the Lake Superior Paper Industry (LSPI) mill in Duluth, MN, are starting up around a team-based structure. Older mills are also trying to gain the benefits of implementing high-commitment/participative organizations through organization redesign.

Why the move to high commitment? The answer lies with the bottom line. Many in the industry claim that by moving to a team-based structure, they can achieve significant gains in efficiency, profitability, quality, and job satisfaction. A participative-management/high-commitment approach succeeds when employees become truly committed and involved in the management of their work; this won't happen unless employees gain access to information and knowledge and are free to make decisions about how to best carry out their work. Accountability, responsibility and decision making are pushed downward. Many believe this is a necessary step toward a successful Total Quality effort.

In 1986, with the sponsorship of senior management, such organizational changes were encouraged in Champion's white-collar and professional areas. This initiative raised many questions. While there is a proven track record for redesign and the team concept in a mill environment, is it also applicable for professionals in the paper industry? Can engineers, scientists, and staff professionals achieve similar gains by moving from a traditional control-oriented management philosophy to a high-commitment/high-involvement one? Are team-based structures applicable? Do teams help improve innovation and technical service? Can a corporate staff group develop a leadership role in the company and help create a competitive advantage? Can the tools of sociotechnical redesign be used to accomplish those changes?

The people at Champion's Technical Center are finding that the answer to those questions is a resounding "yes!"

The context

Champion's corporate technical organization is centralized in West Nyack, NY. Its mission is to provide technical support to the manufacturing operations and to develop proprietary technology in certain product and process areas. The staff includes engineers, chemists, and laboratory technicians organized around functional areas meaningful to the pulp and paper industry: pulping, bleaching, papermaking, etc.

In early 1987, Corporate Technology managers recognized that they could play a far more effective role in helping Champion achieve its business objective. The technical managers strongly believed that to survive in an increasingly competitive and global environment, Champion needed an effective, consistent, well-focused technical effort.

The technical managers felt frustrated that the skills and resources to do the job were not being fully utilized. The internal barriers included:

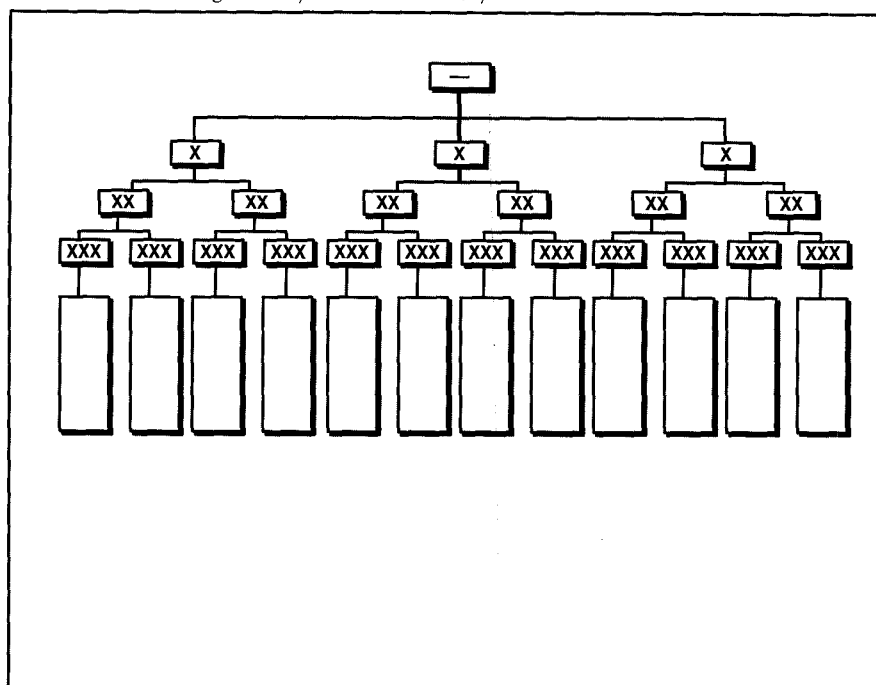
- Lack of commitment and low employee morale and job satisfaction, caused by a 1985 merger and 1986 restructuring resulting in layoffs.
- Lack of "vision" for the corporate technical function, resulting in widespread ambiguity about the role and potential contributions of technology. The absence of a vision led to a reactive service function with little involvement in "front end" planning and shaping of important programs or in developing corporate or business unit strategy. Staff were usually called in to solve problems that could have been avoided had they been involved earlier—and this was a source of frustration and resentment.
- Lack of business perspective. While the level of technical excellence was generally very high, Corporate Technology personnel often lacked an understanding of business needs and issues because they lacked meaningful relationships with the mills and business unit management.

Significant outside forces complicated the internal dynamics. The pace of change was accelerating, causing shorter product cycles, more rapid process innovation, and instant public aware-

ness, particularly on environmental issues. The complexity and diversity of technologies needed to operate a modern mill were becoming enormous. In this fast-paced environment, it was doubtful that the traditional organization could respond to the challenge. What can the isolated professional contribute? How much can our managers know? How can a traditional hierarchical organization process the ever-increasing flow of information with the speed, flexibility, and responsiveness required by its customers?

Because these factors were viewed as barriers to optimizing the deployment and contribution of technology, several managers at West Nyack saw a need for a participative, high-commitment work environment. Thus, the driving forces to start the process of change were in place.

1. Old structure—management by functional hierarchy



The overall redesign process

One of the first hurdles was the lack of benchmarks and case studies in the redesign of an organization of knowledge workers. The tools traditionally used in the manufacturing environment to increase efficiency (such as sociotechnical systems) were considered, but fell short of addressing the strategic aspects of a nonlinear, nonroutine environment.

Broader, more strategic questions needed to be answered: How can a technical function make meaningful contribution to corporate goals and strategies and help create competitive advantage? How do our current or potential products and services support the business strategies? Before analyzing and redesigning the flow of the processes and trying to control variances, we had to understand what processes we should have.

The work redesign effort in Corporate Technology involved five steps:

1. Creating a vision for technology
2. General education: gaining a shared perspective
3. Redesign: how things work now/what should change (structure, systems, culture)
4. Implementation of the change
5. Results: measuring the effect of change.

A brief summary of the five steps involved is in the Appendix. Here, we want to emphasize the development of the vision and the results of redesign.

Creating a vision for technology

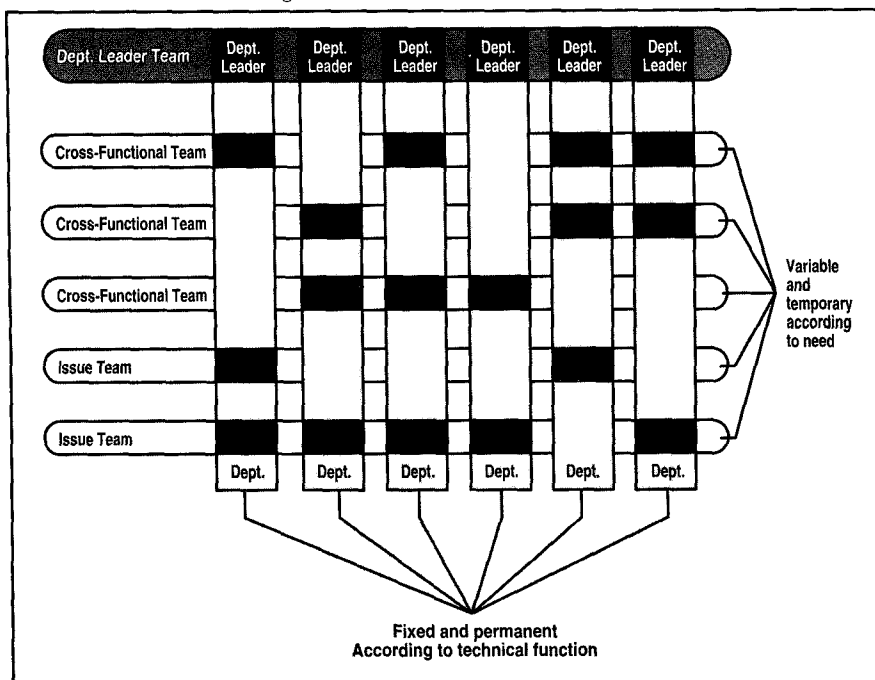
The most important step was "creating a vision." Everything else flows from the vision statement. It creates the common direction and values that are required not only to guide and focus the various phases of the redesign effort, but all future decisions.

Corporate Technology managers started the process by wrestling with the problem of how they could help the company become and remain more competitive through the application of technology. They focused on this question by revisiting the fundamental reason for Corporate Technology's existence and articulating an ideal view of its role. They discussed at length the relationship they had or should have with their different internal and external customers (corporate management, the operating units, and the end-user).

A series of discussions ("team building sessions") held over a period of several months produced a shared vision of what had to be done. By late spring 1987, a vision of Corporate Technology in the 1990s emerged that combined characteristics of the service role and process/product innovation. It was clear that the role of technology could no longer be to just manage the technical leadership of the company.

The management team foresaw several requirements to make this happen. First, the technical effort needed to be more closely integrated with the strategies and plans of the corporation and the operating units. Because resources were limited, they needed to be focused on the programs of greatest importance to the company. This meant identifying the areas of technology and programs most important in achieving and sustaining a competitive advantage and prioritizing these programs to achieve the proper balance between long-term and short-term programs.

2. New structure—matrix management



change would be to obtain commitment on the part of a majority of the people. To that end, the leadership in Corporate Technology actively involved all employees in developing the consensus vision as well as a statement of culture.

Design team's recommendations

The 1992 Vision of Corporate Technology and the new statement of culture were used to focus the various redesign activities throughout the process. By the end of 1987, the macro design team issued the following recommendations:

- Flatten the organization
- Establish self-directed teams
- Develop a meaningful technical ladder
- Integrate the technical programs with business priorities

Second, people at all levels had to become empowered to communicate with the "internal customers" (business units and mills), and willing to take the initiative. Once it was clear what had to be done, it was time to examine how we might change the way we used our resources. We strongly believed that technical contributors at all levels had to develop a better understanding of business needs so they could develop their own ideas and networks of communication for problem solving and not have to rely solely on information and interpretations dispatched by management.

Third, the new system had to reward technical accomplishment (measured in terms of impact on the company) rather than position on the managerial ladder. There was a belief that the demand for technical information (Corporate Technology's product) would increase as the company became leaner and more participative. As a result, the role of the technical specialist or expert would become increasingly important and accepted by others in the company who needed information and knowledge. Equipped with a better understanding of business issues and the proper process skills, the technical expert could learn to communicate directly with business units and senior management rather than through layers of managers. This established the critical importance of creating a meaningful technical ladder. Paying attention to the career issues of technical professionals became a key ingredient for success in the new organization.

The management team recognized that those three requirements had to be met before Technology could deliver results that would establish its credibility in the eyes of the operating units and senior corporate management; only then could Technology lay claim to a position of technical leadership within Champion.

For the vision to be fulfilled, a deep cultural change also needed to occur within the entire organization. A critical ingredient for

- Develop better communications and relationships with operations.

Those recommendations were widely discussed and debated within the organization. Following several levels of review, Champion senior management gave approval for implementation and have maintained their support throughout the change process.

Flat organization, self-managed

Over the past four years, all of the above recommendations have been implemented, and in many cases their scope has been far exceeded. The hierarchy illustrated in Fig. 1 has been dismantled, with layers of management shrinking from five to two.

The team-building process for professional knowledge workers has evolved quite differently from the processes traditionally used to redesign manufacturing work. The type of work is completely different. The product of knowledge workers—information—is rarely the same twice (nonroutine) and is frequently void of visible interdependency (nonlinear). As a result, new techniques, processes, and models to facilitate the development of business goals, process skills, operating systems, and team relationships were created.

Each functional team went through a redesign of its own, driven by the vision and the uncompromising guideline of technical excellence: they addressed the questions of who their customers were, what their products were, how they needed to restructure their team and get a clear view of the new roles of the team members. Defining roles—how members relate and function as part of a team—is a crucial step periodically revisited in "team building sessions." As teams evolve and mature, so do roles and relationships.

Another imperative in this process has been to give internal

customers (mills and business units) satisfaction by keeping their most important needs at the forefront. Within the confines of these priorities, the teams have been given the authority and responsibility for making decisions about their work and for managing their own workflow.

Once the teams got past the transition phase, they became far more effective and efficient than when they operated in a traditional work environment. For one thing, they feel far more responsible for the outcome of their work. They understand why they are doing the work and their knowledge of business and operating issues helps put things in perspective. That is particularly important when someone is asked to do something out of the ordinary that requires a special effort. The system demands the best from people—and they respond because they feel responsible and because the team, not just the manager, depends on them.

Despite those pressures and the fact that people work harder, job satisfaction is at an all-time high. This is not a paradox. Clearly, people are happier when they understand why they do something and feel they have control over how they do it. Technical professionals in the pulp and paper industry are no different; they are motivated by the knowledge that they are working on “important” issues and the recognition that they can make a difference.

Since the redesign began, the amount of time dedicated to training, organizational meetings and implementation has grown manyfold. Yet the effectiveness, contributions, and customer satisfaction have improved. Clearly, the time invested in the change effort was more than offset by the results.

Cross-functional innovation and problem solving

The delayering is getting us closer to a “boundaryless” organization (Fig. 2). Information flows far more effectively than it did before, both up and down management levels and between teams. Perhaps the latter has had the greatest impact on changing the way we work. Barriers between teams have been significantly diminished, opening the way for the formation of informal structures such as task groups, cross-functional teams, or informal groupings of people getting together spontaneously to discuss a particular issue. While the functional teams provide a “home” for an employee to belong administratively and develop his or her professional skills, the cross-functional teams (XFTs) have become the norm for solving problems and carrying out projects.

The ease of formation of these XFTs (and dismantling when no longer needed), often initiated by technical contributors rather than managers, is truly remarkable. This was not always the case. The old system made it extremely difficult to assemble a problem-solving team with representation from different functional groups. If the idea originated within one of the groups, it needed to travel up the chain of command—often as far as the director level—before the cross-functional approval process could start. This director, in turn, had to consider his own level of interest and motivation for collaboration and then solicit the support of other directors and managers, causing the idea to travel horizontally across functional lines and then back down the respective chains of command to the individuals who would be involved.

It wasn't a quick or easy process, in light of many of the groups' turf attitudes and their often quite different functional priorities. By the time approval was secured, the team members usually felt little ownership and enthusiasm for the task at hand. This was partly because it had taken so long and partly because the project detracted from other projects for which they were solely responsible. The success or failure of these projects, they knew very well, would directly affect their compensation. There was little perceived reward for participation in a successful cross-functional effort.

Today's XFTs are proving to be powerful problem-solving vehicles. They allow quick mobilization of specialists from different disciplines to focus on a problem or a specific issue. No longer will a coated paper printability problem, for example, be addressed solely by a coating specialist narrowly investigating approaches within the confines of his or her discipline. A far more effective and productive outcome will be obtained by an XFT including experts from pulping, papermaking, coating, and printing technologies, particularly if the problem happens to be caused by a component in the furnish.

This change also makes it far easier to reach outside the technical organization and include operating, sales, and marketing personnel. This offers great advantages not only when we are dealing with a mill problem requiring quick response but also when we're undertaking a longer-term development effort.

The startup of Champion's Q41 coated fine paper machine at Quinnesec in the fall of 1990 provides excellent examples of how well-organized XFTs can contribute to a successful startup. The culture at Quinnesec has been one of high commitment since its inception. Three years before startup, an XFT with representation from technology, divisional sales, marketing, and the mill began work on the new line of grades for the mill. Through an interactive process involving the pilot manufacture of prototypes, customer feedback, and plenty of diverse input and debate, a line of products was developed. The success of the grade line in the marketplace is well known and underscores the quality of the XFT process and its final product. During the paper machine startup, mill personnel formed and led many problem-solving XFTs to deal with some of the key startup issues. These XFTs included many contributors, including corporate staff group specialists and vendors, and established an excellent track record for quick and effective problem solving.

The success achieved by combining a functional structure with a cross-functional process for problem solving may surprise some, since matrix structures have generally not worked well in traditional organizations. The poor performance stems from diverging priorities of the functional managers, turf issues, and the difficulty of communicating between the many layers of the hierarchy, often resulting in conflicting and confusing directives to cross-functional team members. These problems are avoided in a flat organization where managers operate as a team and are responsible for pursuing the goals of the organization, not their narrower team goals. It is not surprising that it would be extremely difficult if not impossible to have XFTs successfully function in traditional, hierarchical organizations.

A new generation of management

We have found the team concept applicable to the Technology management group as well. One very real benefit of our management team is that turf battles, which dissipated considerable managerial energy in the past, have all but disappeared. Instead, energies are now focused on fulfilling the goals and strategies of the organization. These are well defined and spelled out in a targeting (strategy) document linking organizational goals to the vision and technical programs to business goals and objectives. Revised and updated on a yearly basis, Corporate Technology targeting is well known to everyone in the organization and to our key internal customers.

The managers who have thrived in this new organization generally display strong leadership qualities, especially the ability to manage change. The new management role is focused more on the process than the product of the teams. These managers are intelligent, knowledgeable, flexible, and good at problem solving. Intellectually curious and hard working, they are driven by their commitment to the organization and its goals. They tend to have a good deal of self-assurance and the ability to trust people. This is a must in an organization where the spans of control have in some cases more than doubled.

Strategic alignment with our customers

A key element of the new organization is increased interaction with internal customers—the business units and the mills. A key element of this effort was the creation of the “business unit coordinator” role, somewhat similar to that of account executive for a major customer. A manager or senior technical professional, the coordinator does not try to act as a funnel for information and does not control the many communications and meetings. Rather, the coordinator acts as a facilitator and enabler, understanding the business unit’s most important issues and communicating emerging issues to the appropriate technology personnel. To do this effectively, the coordinator attends certain business unit staff meetings and, more important, the yearly targeting sessions (strategic planning meetings).

In those meetings, the coordinator can help shape some of the key business unit programs that have a technical component by giving feedback on Technology’s capabilities to handle certain issues. This is also an opportunity to recommend technical programs for the business unit to consider. But the greatest value of participation in those meetings is the opportunity to provide a broad technical perspective “in real time” instead of after the fact, as was the case when Technology was handed the finished targeting plan. A major responsibility of the coordinator is to inform the technology organization of those needs and priorities.

There are quarterly review meetings with business unit senior managers to ensure that programs do indeed address their most critical needs. Those meetings also serve as a forum to exchange useful information on future trends. Feedback on new or future business priorities are presented by the business managers; they, in turn, are made aware of technical developments that may present threats or opportunities beyond the short-term business focus.

In addition to holding those formal meetings, we have increased communications at all levels through counterpart meetings, product development teams, training programs for sales trainees and personnel, and more frequent mill meetings and cross-organizational team activities.

Recognizing that our internal customers may require different kinds of technical expertise at different times, we are careful to build the core competencies required and to maintain flexibility. We regularly review the needs of our customers vs. our capabilities and make a deliberate effort to strengthen our capabilities in areas where we have a “value-added” impact and there is the greatest need. Conversely, we try to eliminate or reduce activities in areas where we are not unique or where the need has diminished. This kind of soul searching can be very threatening to some of the people in the organization. To lessen the threat, we keep the process open and make every attempt to retrain professionals and help them fill the new openings.

A new technical ladder that rewards contribution

Early in the redesign process, we began to focus on the role of the technical contributor. For an organization made up of knowledge workers, the shift from a control philosophy to a participative culture seemed likely to require new skills on top of the existing ones. What competencies would allow us to satisfy our customers and place us in a position of leadership? What career opportunities, rewards, and recognition needed to be made available to energize technical professionals in a flat organization?

We determined it would be an important segment of our strategy to build our capabilities around functional teams specializing in the essential core technologies (pulp, bleaching, paper-making, etc.). Through careful staffing and skills development, these teams would not only provide effective technical assistance in those core areas but also help develop competitive advantage.

To maintain technical excellence in those selected areas, we needed to redefine the traditional skills of technical knowhow, problem solving, and responsibility so they were more focused on the emerging vision of providing leadership to the company. In the past, evolving a technology, methodology, or technique to the “state of the art” was viewed as an accomplishment regardless of its connection with business objectives. More frequently than we cared to admit it, a group’s goals were designed to further its technical expertise and were not aligned with the customer’s goals and priorities. Not infrequently, the results were solutions waiting for problems—a most inefficient and wasteful process.

The new generation of technical knowhow had to integrate business knowledge and perspective. The solution of meaningful product and process problems and the impact on the bottom line of the business would be yardsticks by which technical contributors would, from now on, be measured. Problem solving needed to focus on the imaginative use and application of existing technology as well as the development of new ones.

Responsibility also needed to be redefined. In the past, responsibility was measured by the level of supervision one had over the activities of more junior engineers as well as the level of supervision

received. In a flat, self-directed team environment, responsibility would have to be more focused on the breadth and impact of the project, the need to set direction and the level of unreviewed action enjoyed by the technical contributor.

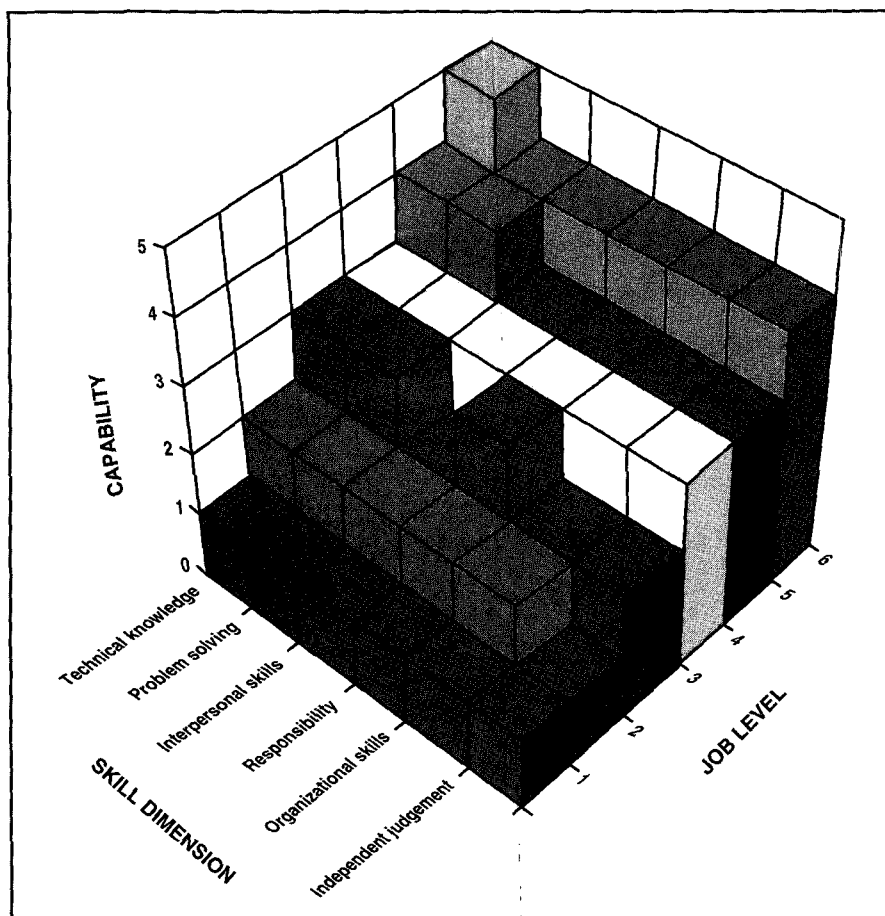
We also identified several new competencies that we deemed essential to supporting the vision, mission, and culture. These included interpersonal leadership, which encompassed both team and enabling skills; communications skills, which focused on the abilities to package, present, and promote; and last but perhaps most crucial, organizational skills. Organizational skills identifies the degree to which one understands, utilizes, and influences the politics, culture, authority, and resources of the corporation. The new system is illustrated in Fig. 3.

Our challenge was to create opportunities and systems that would help people develop these capabilities and then recognize and reward them appropriately. In early 1989 we implemented a "pay for knowledge" system managed through a peer review process. This is a significant departure from traditional compensation systems. Individual contributors are compensated based on their demonstrated ability to contribute within each key competency. Later that same year, a performance assessment and development peer review system was implemented.

Both of these new systems focus on the critical process skills described earlier as well as on technical accomplishments. Although developed by issue teams composed of employees, the pay for knowledge system was controversial when first implemented more than three years ago. The spectrum of responses went from enthusiastic acceptance and support to bafflement and hostility. It took a great deal of communication, training, and discussion of how the system was designed to support the vision before more complete understanding and acceptance were achieved. Once a critical mass was reached, however, progress was quick and the results were truly remarkable. It is clear that the system succeeds in its goal of motivating individuals to develop those critical competencies that are the key not only to organizational success but also to career advancement. This alignment between the elements of career and business success is a critical building block of our self-managed organization.

As they carry out their projects and assignments, engineers, scientists, and chemists must give consideration to aspects that are not purely technical: How will this project be implemented? Which mill people must be informed early on and become part of a network? Who at the Technical Center would benefit from involvement, as a career development step? What communica-

3. Capability, skill dimension, job level

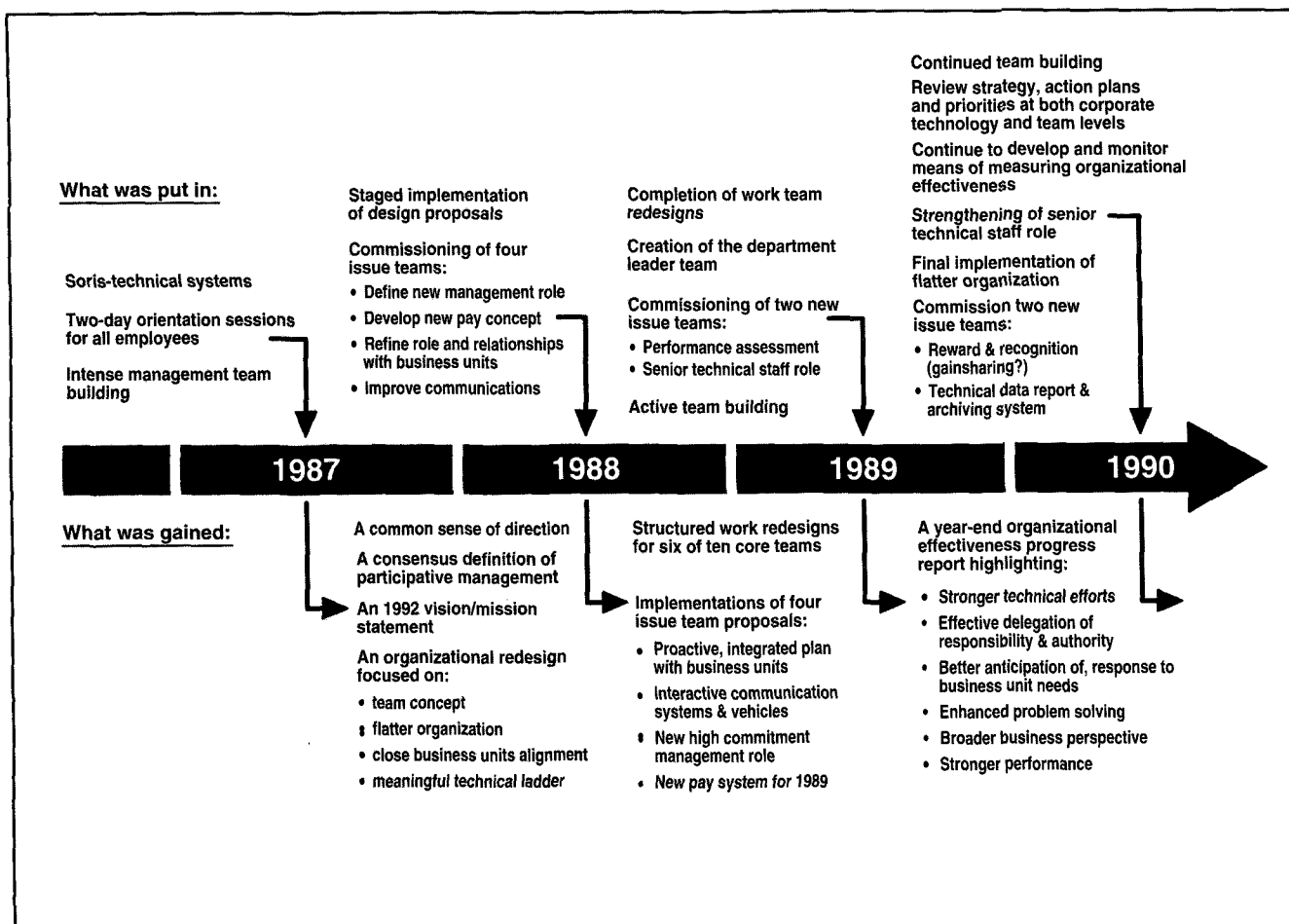


tions, besides standard technical reports, would enhance the project's chances of success? The process reinforces the need to not only identify meaningful technical solutions to recognized business needs, but also actively promote one's work and influence the organization to ensure implementation.

Equipped with a better understanding of business issues and enhanced presentation and influencing skills, a large proportion of Corporate Technology personnel now constitute a network of representatives and advocates very often traveling to the mills and interacting with operations personnel. The practical result is that our ability to produce results has been leveraged because we have greatly expanded the number of people who can make decisions and take action, from a handful of managers to a large number of technical professionals.

Does our new culture help the bottom line?

We have seen that despite increased responsibilities and workload, the morale and job satisfaction of technical professionals have improved. While we had hoped for these important outcomes, the main goal of the redesign was a no-nonsense business objective: the technology group had to become more effective and make a solid contribution to the company's goals, objectives and, yes, bottom line. We have made very big strides toward meeting this goal. We



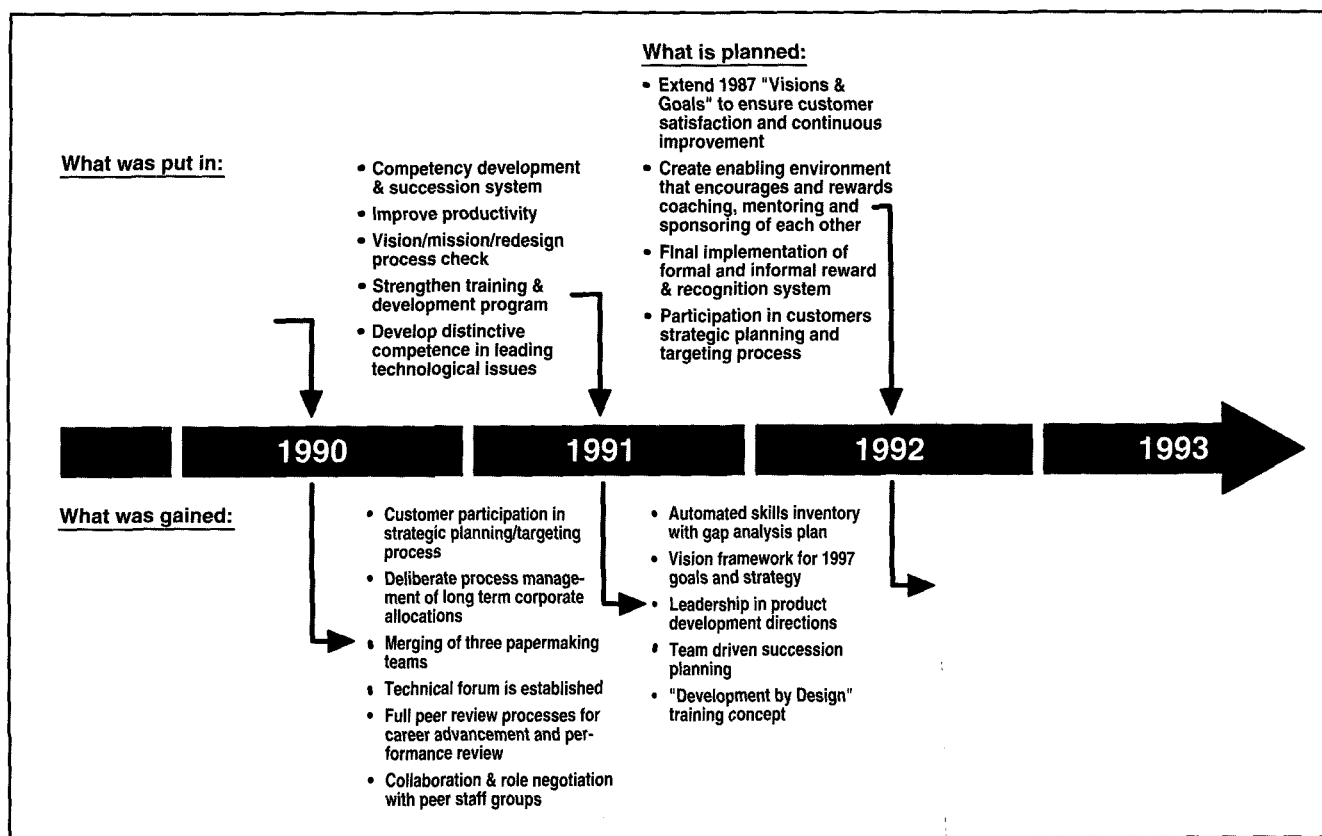
believe it is happening because our culture has become solidly customer-oriented, our products and services are strategic and differentiated, and people at all levels of the organization are empowered to communicate with our internal customers and encouraged to identify opportunities and threats and take action.

Our new technical ladder, with its focus on broad competencies and performance, has shifted recognition from people's position in the organization to the quality and impact of their work. There has been a profound change in people's behavior and attitude. People no longer feel responsible just for their jobs; they now also feel a responsibility to the overall organization, and they act accordingly: with independence and a willingness to take risk. To nurture this newfound sense of commitment, we emphasize personal growth and development and look at people as a resource in need of continuous improvement.

These are the primary reasons why most technology people no longer feel on the sidelines—why they are developing a strong sense of belonging to the whole of Champion. This sense of belonging, coupled with a strong ethic of technical excellence, is releasing the inherent enthusiasm and creative potential of the whole organization. The benefit to the company is a technical organization that offers broader expertise and is more productive, flexible, and responsive to the company's needs. This has been accomplished without an increase in staff.

While it is always difficult to quantify improvements in R&D effectiveness, our measures have been expressions of customer satisfaction. Over the past five years, our internal customers have increasingly solicited our support, involvement, and direction in both the traditional problem-solving role as well as the more-strategic developmental role. This expanding role has been accompanied by a gradual growth in funding support. Our internal customers have described the improvement of the quality and delivery of our services as follows:

- Better focus on projects requiring unique expertise
- Innovative approaches with direct impact on competitiveness and profitability
- Faster, more effective response to field problems
- Earlier and more accurate identification of competitive threats and opportunities
- Greater competence, commitment, and energy across the organization.



Does the system work in a technical environment?

Any initial concerns about the applicability of a participative, high-commitment system to a professional technical environment are long gone. It is clear now that the principles that have made such systems successful in other work environments apply equally well here. Of course, these principles need to be carefully adapted to the needs, nature, and mission of the organization. However, giving employees information, skills, and freedom to act; giving them a stake in the larger organization; and rewarding the right behaviors clearly seem universal ingredients for success. In our technology organization, we have come to see a high-commitment culture as ideal for implementing ideas and solving problems—and for a technical or R&D organization in the pulp and paper industry, implementation of new ideas has traditionally been far more difficult than coming up with those ideas.

Where do we go from here? We intend to link our culture with the Total Quality initiatives in our operating units. Developing a common language, common approaches to continuous improvement, and common goals can only bring us closer. While our early focus was on developing effective working relationships at the business unit management level, much remains to be done to improve our relationships and communications with the operating locations. This is a time-consuming and arduous task because each mill is unique in its people and culture and requires a special focus. We need to do this, however, in order to fulfill our vision of providing technical leadership to the company. Periodically, we

will revisit our vision, update our goals, and make sure our programs continue to be timely and relevant to the needs of the business. We realize that in order to remain successful we must continuously improve, so our change effort must go on.

A surprising fact is that people now want to look only forward, not back. The sense of common vision and commitment has created an energy and momentum of its own. The qualities of leadership, innovation, and ability to influence, which previously resided in a chosen few managers, are now evident in many technical people across the organization. All employees initiate change, take responsibility for the process, and understand their role in creating the future.

Because of our new systems and the commitment on the part of our people, we believe that we have in place an organization that will help us change, adapt, and continuously improve. **II**

This article is dedicated to the people of Champion's Corporate Technology. Without their professionalism, dedication and creativity, our change effort could never have succeeded.

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