

**MALCOLM BALDRIGE NATIONAL QUALITY AWARD 1992 WINNER
AT&T NETWORK SYSTEMS GROUP,
TRANSMISSION SYSTEMS BUSINESS UNIT (TSBU)**

A division of AT&T since 1955, TSBU was reorganized in 1989 into one of the six separate business units within the AT&T Network Systems Group. Headquartered in Morristown, N.J., the company employs 7,500 people at nine U.S. sites. Approximately two-thirds are employed at TSBU's manufacturing plant in North Andover, Mass. Five facilities in Europe employ another 3,000 people.



In 1990 the Competitive Technologies, Inc. (CTi) consulting team, led by Bob Seemer, conducted a Malcolm Baldrige based assessment and developed an action plan to significantly improve corporate performance as measured by the Key Performance Indicators of the Leadership Scorecard. Elements of the CTi Success Plan included:

1. A Strategic Plan to position AT&T - TSBU to be a leader in its market. The CTi Golden Thread process was used to connect every employee to strategic goals.
2. Process management to define and systematically improve all key processes.
3. Six sigma training to include the use of statistical tools and CTi's Quality Improvement and Control (QIC) Storyboard methodology.
4. Human Resource Planning to integrate the needs of the business with workforce capacity.
5. Quality Function Deployment (QFD) to solidify the linkage between external customers and internal processes.
6. Systematic management reviews, based on CTi's "One-Page QIC Story" to evaluate progress and recognize success.

Following is a summary of the TSBU management system.

At least once a year, many of TSBU's major customers issue detailed, individualized "report cards," grading the equipment supplier on the product and service characteristics they deem most important. Guided by analyses of 11 types of customer-related information -- from report cards to various measures of the quality and responsiveness of customer-support services -- TSBU's integrated strategic planning process ensures that accomplishing performance-improvement goals contributes directly to increases in customer satisfaction and gains in the market.

For telecommunications companies, reliability is the top priority for transmission equipment. The reliability of TSBU products exceeds customer expectations in all of the company's markets. On the basis of that record and continuing improvement in product quality, TSBU was the first in the industry to offer a 5-year warranty. Warranty costs average 1 percent of revenues, just as they did when TSBU offered a 2-year guarantee.

Since 1989, TSBU has cut new product-development time in half and realized cost savings totaling \$300 million. The company has pursued high-growth export markets, picking up 37 new international customers since 1985.

Competing in a \$15-billion international market, the company develops, manufactures, markets, and services systems for transporting data, voice, and images over public and private telecommunications networks. Digital loop carrier systems, digital access and cross-connect systems, and network multiplex equipment generate half of total sales. Lightwave systems and an array of other systems and equipment account for the remainder.

TSBU is the world's second largest maker of transmission systems. Sales to the seven Regional Bell Operating Companies and the AT&T worldwide network account for a large portion of revenues. Sales to independent telephone companies, private networks, interexchange carriers, cable television companies and cellular providers, and, in particular, foreign telephone companies account for a growing share of business.

Quality Approach

Implemented by Bob Seemer of Competitive Technologies, Inc. and fine-tuned on the basis of lessons learned from internal evaluations and benchmarking studies, TSBU's planning process is designed to create a clear cause-and-effect relationship among priorities, goals, and subsequent improvement actions. Called "CTi-Policy Deployment," the iterative process establishes links from AT&T's quality principles through TSBU's 13 "detailed objectives" to the specific quality improvement projects now being carried out by more than 800 teams using CTi's QIC Story methodology.

To tighten linkages within TSBU and speed decision making, the company's Quality Council, chaired by President Greg Hughes, is approaching the goal of trimming two management layers. Concurrently, TSBU reduced the number of classifications for hourly workers to 80, down from 1,300. An additional measure to help tighten the focus on quality improvement was to train union leaders in the CTi Policy Deployment process.

The eight executives on the Quality Council initiate planning and serve as members on any one of four steering committees, which also include high-level managers of TSBU's major units. Supported by business management teams, the cross-organizational steering committees translate the TSBU goals into specific quality projects required to accomplish the company's annual and 5-year goals. The draft strategic plan is communicated to employees at all levels and to key suppliers. Units develop their own plans, detailing the steps and resources required to reach their specific goals. They also can suggest changes in the TSBU strategic plan. Once the plan is approved, progress is reviewed at the Quality Council's biweekly meetings.

Teams, CTi six sigma training, policy deployment, and increased authority for workers are key elements of quality-improvement efforts. Seventy-nine percent of the workforce participated on teams in 1991. To help accomplish their objectives, teams are aided by company-trained employees, who provide skills training and serve as resources throughout all phases of the teams' work. New employees participate in a 2-day customer-focused CTi Quality Orientation Program; each employee is expected to

receive a minimum of 40 hours of training and education a year, including CTI's six sigma, process management, and Quality Improvement and Control (QIC) Story.

TSBU's information systems help executives, managers, and workers track key processes in all phases and at all levels of the business. Performance indicators are selected carefully and reviewed regularly to ensure that the information supports decision making as well as management and improvement of processes determined to impact customer satisfaction. High-level, aggregated analyses of TSBU data show direct correlation between quality improvement and measures of customer satisfaction and financial performance.

At the manufacturing level, TSBU emphasizes automated data collection. Bar codes and electronic links between machines enable real-time updates on process performance and ensure the accuracy of the manufacturing data. This and other information guide company efforts to reduce production time and speed development of new products.

Design for manufacturability is an essential element of these efforts. For example, data on the reliability of components guide decisions on suppliers. During the extensive review and certification process, manufacturing representatives on the product development team can refuse designs that will not match or exceed yields of existing products.

TSBU uses a variety of methods to build and maintain customer relationships and to gather feedback on the quality of its products and services. In addition to the report cards customers use to evaluate TSBU against the performance characteristics they define as most important, TSBU uses summaries of contacts, customer focus groups, complaints, requests for technical assistance, evaluations of competitors, and surveys to assess its performance from the customer's perspective.

TSBU also has programs to ascertain customers' long-term needs and to predict what new technology will be needed to meet those needs. For example, in 1991 it conducted 23 forums during which TSBU shared (under non-disclosure agreements) its future technical directions and customers explained their long-term plans and expectations. The information helps TSBU strengthen its customer relationships and sharpen its focus on the steps it must take to accomplish its 1997 goal of being the world's largest supplier of transmission equipment.