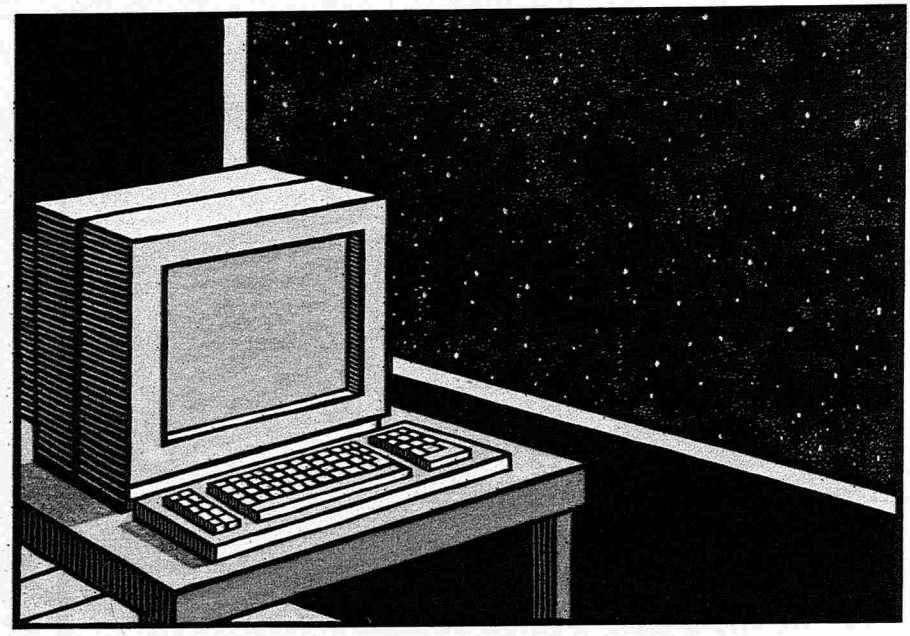

Terry Smith

Beam Me Up, Scotty

A look at how technological advances, especially satellite-delivered learning, is helping Motorola employees stay ahead of change.

By JOHN ROBINSON

A morning creativity seminar; a computer-based training course on graphics software at lunch; an afternoon viewing of a live, satellite-transmitted artificial intelligence program: such might be a Motorola engineer's typical day at the Galvin Center for Continuing Education. In the near future that same engineer might also participate in a teleconference with Motorola offices around the country or serve as an instructor for a technical training session broadcast to marketing managers at other company locations.

With 1986 sales of $5.88 billion and more than 90,000 employees worldwide, Motorola not only must be at the forefront of technology, but the company must be a step ahead of it to remain competitive in the worldwide marketplace. Motorola believes strongly that one way to out-pace the technology is to offer employees good, professional education in a variety of state-of-the-art technical and managerial topics.

The $10 million Galvin Center, for the

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use of Motorola employees worldwide, is testimony to Motorola's dedication to training and education. The Motorola Training and Education Center (MTEC), our corporate training department, is one of the many training organizations that relies heavily upon the Galvin Center facilities, which opened in 1986.

Teaching technology with technology

From our beginnings in 1981, MTEC was determined to do more than just provide seminars and live classes. At the outset, we planned to use technology whenever possible to make Motorola training more efficient, more effective, and more widely available worldwide. Our use of new delivery technologies such as computer-based training, electronic publishing, and office automation will be absolutely vital to achieving MTEC's mission.

But perhaps one of the most exciting technological additions for MTEC and Motorola employees has been the recent installation of a satellite communications system to deliver live, interactive training programs. With capabilities to both receive and transmit, satellite communications is another in a long list of educational milestones here.

The road to satellite communications

During our strategic planning for the Galvin Center, MTEC decided the center should be both a classroom training facility and an electronic distribution point. As we appropriated money for bricks and mortar, we planned for a state-of-the-art satellite communications system that could receive educational programs, transmit internally produced courses, and function as a key element of our teleconferencing network.

Once we conceived the idea of satellite communications, we held a series of meetings with many Motorola departments to discuss how such a system would fit into MTEC's overall goals and service to the company. Next we searched for a consultant in telecommunications and teleconferencing who could help MTEC locate the best satellite communications equipment vendor. We selected the consulting firm Rubin-Bednarek & Associates of Washington, D.C., because of its experience in public broadcasting and because it had served IBM and the National Technological University (NTU).

The consultants studied our needs and helped us prepare and distribute bid documents for the manufacture, installation, and service of the satellite communications equipment. Three companies responded, and we chose Microdyne Corporation of Ocala, Florida. In May 1986 Microdyne sent a field engineering team to MTEC, which worked with our people to plan carefully every step in the installation process. Microdyne then manufactured the equipment, installed it, and optimized it.

Based on our internally determined needs, as well as the recommendations of our consultant, Microdyne provided an automated terminal (MAT) with a 3.6-meter receiving antenna and a 5-meter transmitting antenna at the Galvin Center. Microdyne also installed MAT 3.6-meter receive-only systems at Motorola's Fort Worth and Austin sites. In the near future, we'll also install satellite communications equipment at our Arcade, New York, Seguin, Texas, and Phoenix locations.

The system gives many employees the opportunity to attend in-depth seminars without even leaving their work locations

System delivers on promises

Thanks to our new satellite system, Motorola employees have more access to timely and important business, management, and technical information than ever before. The system gives many employees the opportunity to attend in-depth seminars without leaving their work locations. People can simply walk across the campus to view a satellite-transmitted seminar on electronic engineering, rather than leave the office for one or two days for an out-of-town course.

As soon as our television receive-only (TVRO) systems were up and running, we began receiving educational programs from NTU, Notre Dame, the International Electrical and Electronic Engineering Society (IEEE), Tandem Computer Company, and the U.S. Department of Commerce. Today we deliver NTU programming five days a week and two special NTU programs each month. Courses include "Mechanical Design for Automation," "Visioning: Setting Management Strategy," "Design for Assembly," "Computer-Integrated Manufacturing: The Basic Architecture," and "Drug and Alcohol Abuse in the Workplace." Motorola estimates that about 80 employees nationwide were enrolled in master's degree programs with NTU by the end of 1987.

Other programs offered via satellite cover a range of topics, from a Texas Instruments-sponsored overview of artificial intelligence to a U.S. Department of Labor telecast on workforce retraining. In the near future we'll provide seminars on competitive manufacturing from IBM and on computer-integrated manufacturing from IEEE.

So far, the user suggestions to MTEC have driven the selection of satellite-communicated training material. We find that a live, interactive, lecture-type format generally works best with the satellite system, as it gives students the opportunity to ask questions and provide immediate feedback to the instructor. To date, satellite seminars have reached nearly 600 Motorola employees, with classes of about 15 employees viewing programs on a regular basis. MTEC estimates that, by the end of 1987, classes of more than 50 students were regularly viewing satellite-received programming at Schaumburg, Illinois, and at other Motorola sites.

We know the training programs are well liked due to the tremendous response and programming requests MTEC has received. When we first began presenting the broadcasts, we got about one request for new programming each month. These days, we normally receive three to five requests per month. That tells us that employees are enthusiastic about the current programming and want the satellite communications program expanded.

Results are pleasing

With our satellite communications system up and running for about a year, MTEC is happy with the results so far. Motorola appropriates about $20,000 for each site where we install satellite communications equipment. The operating and maintenance costs are essentially negligible. Microdyne continued field engineering support during start-up. I

Getting Started

When you're ready to embark upon installing and using a satellite system for training and education, teleconferencing, or any other application, the following step-by-step approach should lead to success.

1. Gather information and define your criteria.

Read, call your colleagues, and generally find out what others are doing and how they have applied satellite technology to serve their needs. Then discuss the concept internally, carefully defining your criteria.

2. Get a consultant.

Find and retain an experienced satellite communications consultant to make certain your proposed system will receive from and transmit to the appropriate satellites. Use this consultant to help your selection of an equipment supplier and installer.

3. Select a supplier.

Locate and contract with a satellite communications equipment supplier that is experienced with turnkey, industrial needs. Avoid the local T.V. store that installs satellite systems as a sideline.

4. Install and implement the system.

Have a television receive only (TVRO) system installed first and gain experience with that before attempting the more sophisticated transmitting systems for teleconferencing.

recommend others demand similar vendor support to ensure successful implementation and operation.

MTEC believes its technological investment is paying off well. Employees now can receive training and education where they work, rather than spending valuable time and company money traveling to remote sites. And, beyond the cost savings, Motorola views its satellite communications program as an investment in the ultimate in high technology—our employees. Satellite communication allows us to convey information to employees in a more timely and, we think, more stimulating fashion than other educational media.

Future developments

Now that we have received a Federal Communications Commission (FCC) license, we plan to transmit our own educational programs from the Galvin Center. This is the next step in fully implementing the Motorola training and education satellite network. We will use existing staff and contract television production personnel and personalities as required. When we begin to transmit, we'll use the system not only for training and education, but for new product introductions, teleconferencing, and for communicating with our customers, suppliers, and other corporations.

As Motorola's products and services change and become more complex, MTEC personnel's jobs are changing too. Historically, cycle time for new product development was two to three years. But today the marketplace demands product cycle times of less than one year. This means that training and education no longer can lag behind new product development but must, in fact, anticipate it.

Clearly, MTEC's continuing mission is to provide Motorola employees with the right training at the right time. The people and technologies we have in place are allowing us to do just that.