

High-Tech Training for Georgia's Companies

Quick Start's innovative computer-based training helps attract new industries to Georgia.

by Denise H. Horton



POP IN THE CD AND THE THEME from *Titanic* sails into the room — a simple pleasure that involves a not-so-simple process.

Understanding how it all works may interest many music lovers. But, for the people who make more than 60,000 CDs a day at Sony Disc Manufacturing's Carrollton, Ga., plant, it's essential knowledge.

Sony employees must know not only how CDs work, but also must understand the overall manufacturing process, said Chris Rosauer, Sony's senior video engineer.

Making Sony CDs is a highly automated process where machines do almost everything. Machinery operates at open throttle, 24 hours a day, 7 days a week, producing CDs like the *Titanic* soundtrack in seconds. Imagine running your car under similar conditions, and you can understand why CD manufacturing machinery needs frequent "tune-ups" to avoid product defects. Quality testing devices detect defects, but the machines are only "smart" enough to put the good CDs in one stack and the bad ones in another.

It's the technicians who diagnose and troubleshoot quality problems and in CD manufacturing, that means several billion components on a single CD must be right to meet strict quality standards.

Training new employees to interpret complicated printouts from the quality tests and to troubleshoot problems is a daunting task that calls for innovation, knowledge and skill.

That's where multimedia-based training comes in.

Multimedia-based is the new generation in computer-based training. Because the training software is stored on a CD-ROM, it can be run on a computer anytime, anywhere. It works much like a computer game. And like a computer game, multimedia training CDs combine text with sound, video, 3-D animation, high-resolution graphics, games and simulations.



Sony employees spend 3 to 4 hours in multimedia-based training developed by Quick Start

"If you have training that's entertaining and does the job, you've got a sure winner. People learn more if they have fun while they train," said Will Grasse, one of Quick Start's computer-based training developers who helped create Sony's customized, multimedia training course.

Surveys show that more than 80 percent of Fortune 1000 companies are using multimedia for training. The reasons? Employees learn more efficiently and remember what they learn longer when they see, hear and interact with what they're learning. And actual training time can be reduced by up to 40 percent, in part because students set their own pace.

Multimedia training also gives students insight into production that conventional training methods can't provide. Take Sony's training course, for example. The surface of CDs are covered with microscopic hills and valleys called lands and pits. Their size, shape and arrangement affect sound quality. It's easier to understand how they do that if you can "see" them on a computer screen.

Computer-based training also can be safer since trainees can practice dangerous procedures, such as handling high temperature materials, before they encounter them in the workplace.

Since 1967, more than 263,000 employees at more than 2,600 companies have benefited from Quick Start training. Administered by the Technical College System of Georgia, Quick Start provides free training as an incentive to attract new industries to Georgia and to help established ones expand.

In recent years, Quick Start has won praise for its use of multimedia in the training programs it has developed for such companies as Anheuser-Busch Co., CIBA Vision, General Mills, Merck Pharmaceuticals, and SKC, a Korean polymer film manufacturer. The ability to offer training of this caliber helps attract new companies to Georgia. And the cost of this high-tech training is a drop in the bucket compared to the payoff to the state. SKC alone will make more than a \$1 billion capital investment in Georgia, not to mention that more than 1,000 jobs will be created over a 10 year period when its Covington, Ga. plant opens in 1999.

Jackie Rohosky, assistant commissioner of DTAE's economic development programs, found out just how far ahead Georgia's multimedia-based training program is compared to other states when she attended a National Governor's Association meeting in April. As part of Rohosky's presentation about DTAE's services to business and industry, the computer-based training development team demonstrated examples of Quick Start's work.

"A number of people kept saying, 'You're a state agency?'" said Sun Clinton, a Quick Start computer-based training developer. "After we arrived home, we got calls from all over the United States. They wanted to know what we do and how we are doing it."

"We were pleased with such a positive response to our computer-based training programs," Rohosky said. "We know that a state must provide this high level of service to be competitive,"

The Process

Quick Start develops multimedia-based training CDs as part of a complete training package when that is the best way to meet a client company's needs. For the Sony training Project, Quick Start assembled a team of experts to work with Sony employees, such as Rosauer and other technical experts. Quick Start headed the production end, providing animators, computer programmers, graphic artists, instructional designers and video producers.

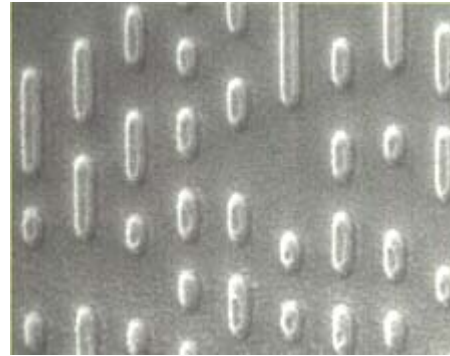
The Quick Start group had to learn every detail about how the company makes CDs.

"You almost learn more than you want to," quipped Grasse.

"Did you know that if each pit and land on a CD were the size of a piece of rice, a CD would be a half mile in diameter?"

To understand just how, Sony's machines work, tiny video cameras were attached to the inside of production equipment to record what happens when a CD is made. The videos were transformed into detailed, animated graphics to give a machine's-eye view of the process.

But understanding the ins and outs of making a CD as only the beginning.



*Microscopic pits and lands on a CD's surface encode the music. Flaws in their shape or arrangement make a CD "skip."
(Photo/Beth Richardson)*

The Sony/Quick Start team also defined the company's training needs, reviewed educational materials already in use and developed a general training plan. Then they got down to specific, such as: What are the training objectives? How will employees practice the tasks they'll learn? How long will it take to complete the program? For example, multimedia-based training programs generally last anywhere from 1-1/2 to 4 hours.

Next, the team created a storyboard showing every frame in the finished product. Once the storyboard was approved by Sony officials, the animators went to work. Creating the training CD takes anywhere from two weeks to six months, depending on the technical complexity of the finished product.

"As a kid, I dreamed I'd be an animator for Disney," Grasse said. "I never imagined I'd work for the state as an animator for training programs." But that is exactly what he does, using the same animation software that Hollywood used in movies like *Lost in Space* and *Jurassic Park*.

While the final product is as sophisticated as anything in the movies, snazzy graphics aren't the primary goal.

"If you don't learn anything from the multimedia-based training, then the glamour doesn't matter," said Clinton. "We spend probably two-thirds of our time making sure the instructional design is sound. We have to think about the learning styles of the employees, and we have to make sure our program is as simple to use as possible."



*Chris Rosauer, senior video engineer at Sony, checks a CD for microscopic defects.
(Photo/Sony)*

The Product

"It saved my life," said Drew Morgan, as he described the multimedia training CD that Quick Start developed for his company.

When CIBA Vision Atlanta obtained a new process from its sister company in Germany in 1996, Morgan found himself in charge of teaching trainers about the process.

"It's a fairly complicated and labor-intensive process that involves lathe cutting of toric contact lenses," said Morgan, senior project engineer. Toric contact lenses correct astigmatism, a common vision defect that can't be corrected with "soft" contact lenses.



The complex geometry of eyeball shapes and contact lenses is easier to understand with CIBA Vision's multimedia-based training program. Developed by Quick Start, the training increased yield and productivity.

The complex geometry of toric lenses is difficult to explain with conventional chalkboard and book techniques. Morgan realized that a different approach was necessary. So he called Quick Start, which assigned a team to develop a multimedia CD for the company's training center.

"They [Quick Start] were able to put things into a language everybody could understand" Morgan said.

The training begins by explaining how different contact lenses change the path of light into the eye and the differences between normal, farsighted, nearsighted and toric or astigmatic eyes.

"A normal human eye is shaped like a basketball; it's round," Morgan said.

"Nearsighted eyes have a steeper radius, more like a soccer ball, and farsighted eyes have a flatter radius similar to a beach ball. Astigmatic eyes have toric or football-shaped corneas."

Visual distortion occurs when light is not properly focused on the retina because either the eye or the cornea is slightly out-of-round. Contact lenses correct vision defects by changing the path of light so it focuses correctly on the retina.

The training CD also helps explain to workers why they do certain things and why those things are so important.

"Employees can solve problems by understanding this process. If they are having problems with something, it's just human nature that they may leave something out. But if they understand what leaving something out does to the eye and to the person, they won't take a shortcut," he said.

At the click of a mouse, the training program explains technical terms for the parts of a lens, like optic zone, lenticular zone and bevel.

"You just point, click and there is a 3-D visualization of that term," Morgan said.

One section of the training is an animation that shows a toric lens being cut.

"They take an actual lens and show a diamond tool going across it. Fragments explode away to show the shape of the surface that is created," Morgan said.

"Computer-based training was ideal for the Sony and CIBA Vision projects," said Mike Grundmann, Quick Start instructional designer.

"In both cases, you're dealing with things you can't see — the sphere you're cutting for contact lenses or the pits and lands on a CD. And motion was important to help people understand," he said.

The best news is that after the Quick Start training CD was introduced, CIBA Vision Atlanta increased its yields and productivity.

"The work Quick Start did for CIBA Vision a few years ago helped convince them that Georgia was the best place to open another plant," said Jim Steed, director, industrial development division, Georgia Department of Industry, Trade and Tourism. A brand new plant in North Fulton began manufacturing disposable contact lenses this fall.



*A CIBA Vision technician sorts contact lenses based on the power of the lens.
(Photo/CIBA Vision)*



SKC trainees enter a virtual world of training on machines that haven't even been built yet using a multimedia-based training program that Quick Start developed for the company.

Not every company needs a highly complex, multimedia-based training program. For some companies, Quick Start developed straightforward, menu-driven programs that use scanned images, basic graphics and only a couple of animated images. For others, such as SKC, a virtual world using 3-D animation was created to show employees what different machines do and how to operate them.

Working with SKC has offered Quick Start new challenges. For one, the company is still building the equipment. "We've been working from blueprints to develop 3-D animation of machines that are so huge they'll have to be moved into the plant with a crane," Grasse said.

For another, SKC frequently sends subject matter experts from Korea to consult with the Quick Start team. So Clinton, who speaks Korean, has been able to translate when necessary.

"For example, a subject matter expert who is newly arrived from Korea may not understand our idioms and slang, no to mention the Southern accent," Clinton said. "I can speak to them in Korean and give them a clearer understanding of a concept."

But the Quick Start team's work goes far beyond the mere translation of language and manufacturing processes, said Dr. Young Lee, vice president of manufacturing and technical services for SKC.

"When we open in early 1999, we will hire 356 people for our plant, most of whom will come from the local area," he said. "Because we're hiring a lot of people who have no experience in this kind of work, multimedia-based training provides them with a dynamic view of the process that they can easily understand."

Lee also noted that there is never any question as to the thoroughness of a multimedia-based training program.

"When you use a person, the training depends on the skill of the trainer," he said. "With multimedia-based training, there's no variability. The information it provides is the same, time after time."

Multimedia-based training also enables new employees to reinforce their knowledge over a period of time.

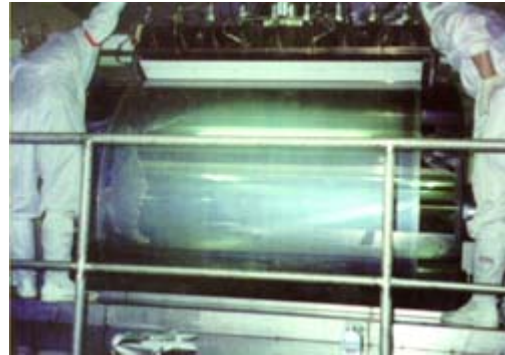
"Sometimes, a person may seem to understand a process, but there can be so many new terms that it's hard to retain all of the information," Lee said. "He may go to work, but then realizes that he doesn't thoroughly understand a procedure. With multimedia-based training, he might review a process that's confusing and gain a more thorough understanding of what he needs to do."

SKC also will use the multimedia training CD to explain to outsiders what the company does.

"We make polymer film that is used in more than 10,000 items," Lee said. "It's used for magnetic coding on computer tapes, for VCR tapes, for overhead projector film, microfilm, and many other products. It will be helpful for us to use some of the multimedia-based training program to provide an overview of our company to others."

The possibilities available for computer-based training have exploded in recent years as a result of lightning-speed changes in computer technology.

When used with other methods, computer-based training is a highly effective way to meet a variety of needs. Besides its instructional advantages, Quick Start's multimedia-based training can be directly transformed into Web-based, training. And that is opening a whole new set of opportunities.



SKC employees inspect polymer film as it is being cast. Instruction in the manufacturing process is part of Quick Start's training program. (Photo/SKC)

For more information about Quick Start call (404) 679-1700 or
check out their website at www.dtae.org/quickstart

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