



Gold-Medal Tech

Athletes turn to a Swiss video company, Dartfish, for Olympic perfection

BY SEAN GREGORY COLORADO SPRINGS

TTARA KIRK, A STANFORD SENIOR AND an Olympic-swimming-medal hopeful, swore her body was straight in the water as she raced. Then she looked at herself on the small screen. Her coach had popped open a laptop and, using a software program called Dartswim, superimposed a picture of Kirk's technique from 2002 on an image of her current form. The message was clearer than a chlorinated pool: despite some improvement, she still arched her body during the strokes, adding seconds to her time. "You can't go with what you feel," says her college coach, Richard Quick. "Tara felt like she was doing the stroke properly, but Dartswim pointed out the flaws. Once she saw them, she began to improve." That was in January. Two months later, at the NCAA championships, Kirk placed first in the 100-m breaststroke. And she set a world record.

Olympians still train like the ancients, twirling on the pommel horse for hours, waking up at 6 a.m. to run 50 laps by break-



Bergonzoli calls the U.S. his company's top growth target

fast. But athletes are increasingly using the latest innovations to help them gain an edge. These include sharkskin swimsuits that reduce friction, video goggles that let rowers watch themselves paddle and speedometers for sprinters.

The most successful of the Olympic-tech companies is Switzerland-based **Dartfish**, whose training software, including Dartswim, is used by athletes in more than 20 countries, including Germany, Thailand and Venezuela. In the U.S., some two dozen Olympic sports use Dartfish. The technology helped athletes worldwide win 45 medals in the 2002 Winter Games, according to Victor Bergonzoli, general manager of the company's U.S. unit. "There are about half a dozen similar programs," says Mike Leigh, a technologist for the U.S. Olympic Committee in Colorado Springs, Colo., who has worked in sports science for 20 years. "But none works better than Dartfish."

How exactly does Dartfish operate? The software program imports digital video into a computer. Then an athlete or a coach conducts both qualitative and quantitative analyses. For example,

Dartfish's SimulCam technology, which Kirk and her coach used at the pool, allows separate video clips to be superimposed on one another so swimmers and gymnasts can compare their current strokes and dismounts with their best and worst performances.

LANE CLAYTON FOR TIME



Dartfish's StroMotion feature gives coaches a frame-by-frame progression of a swimmer's dive start

SimulCam also adjusts images so athletes appear to be the same size, even if, for example, the camera was zoomed in on the first shot-putter but zoomed out on the second. Another feature, StroMotion, can freeze a long jumper's position at various points in flight; the jumper resembles cartoon cels whooshing across the screen. The program also makes quick calculations. To illustrate, Leigh pauses a video of speed skater Apolo Anton Ohno, a gold medalist, and another skater approaching a left turn. In speed skating, the lower the knee's angle, the faster you explode around a bend. Leigh pointed and clicked on two knees. It's easy to decode an advantage: Ohno's angle was 52° ; his competitor's, 130° .

Dartfish rose to Olympic glory quicker than Marion Jones. In 1997 Serge Ayer, a graduate student at the Swiss Polytechnic Institute, and his professor Martin Vetterli developed the SimulCam blueprint. Ayer and his brother Jean-Marie, then a Swisscom executive and now CEO of Dartfish Europe, spent Sunday dinners discussing potential applications for SimulCam. They sensed an opportunity on television. Says Serge: "What we saw happening on TV during sport competitions, such as split screen and instant replay, wasn't good enough." Their idea was to layer the positions of two athletes at the same point of, say, a ski race so TV commentators could easily explain and viewers could easily see the differences. Jean-Marie quit his job and took Bergonzoli, a colleague, with him. In 1998 the pair launched Dartfish in an old chocolate factory in Fribourg, a 900-year-old city east of Geneva. Dartfish's technology gained notice when NBC used it on skiing telecasts during the 2002 Winter Olympics. The company also sold StroMotion to TNT, which has shown NBA players gliding through the air like ghosts.

Although television has given Dartfish invaluable exposure, it doesn't pay the bulk of the bills. Of the company's \$5 million in 2003 sales, only 15%, or \$750,000, came from television; athletic-training soft-

A Dartfish view of a javelin throw. More than 20 countries are using the software for the Athens Games

were accounted for the rest. The company says the Athens Olympics will generate only 8% to 10% of this year's \$7.5 million in expected revenue. Professional teams (in the U.S., 10 baseball, basketball and football franchises use Dartfish), colleges, youth coaches and other sports markets supply most of the company's funds. In France golf pros have taken to Dartfish. In one British school district, gym teachers dissect their students' badminton swings with the program. "With television and the Olympic sports, we are starting at the top of the pyramid," says Bergonzoli. "Step by step, we'll work our way down and tap into the millions of coaches and athletes who will want this software." A Little League coach who needs the basics can get Dartfish for \$500. The pros dish out \$5,000 for a more advanced version.

Few doubt Dartfish's value, but because of the perpetually crowded sports market, some question its long-term prospects. "The amateur athletes don't have much money to spend," says Leigh, who has also invested in sports-technology companies. "And the pros expect everything to be given to them. It's a tough row to hoe." Bergonzoli says the pros get no freebies from Dartfish and that downward pressure on tech costs will increase volume. The company, which grew 40% last year, broke even for the first time this past quarter. For a young tech firm like Dartfish, that's cause for a series of backflips. In StroMotion. —With reporting by

Helena Bachmann/Fribourg



DARTFISH