

Valley start-up helps cops, military quickly pinpoint origin of gunshots

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By Scott Duke Harris
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Nobody called the cops, nobody dialed 911.

But when newly installed technology picked up the sound of gunfire in York, Pa., last month, it quickly directed police to a precise location where they found a 21-year-old man who had been shot three times. He was rushed to a hospital where he recovered from his wounds.

Chalk up another success for ShotSpotter, an unusual, fast-growing Silicon Valley company whose system for pinpointing the origin of gunshots is now getting deployed in cities across America - including neighborhoods in Oakland, San Francisco and East Palo Alto. This technology, first introduced in Redwood City in the mid-1990s but widely adopted only recently, is also being tested by U.S. forces in Iraq.

Enhancing public safety in gritty, crime-ridden urban milieus is not considered a conventional market opportunity in Silicon Valley - one reason, some suggest, that ShotSpotter struggled as a start-up. But a tenfold increase in sales over the past two years has placed the system in 30 jurisdictions. A new round \$7.5 million in venture funding will be used to develop international markets.

Police agencies and the FBI say the ShotSpotter technology has proven to be a valuable tool for combating and deterring crime.



James Beldock is President and CEO of Shot Spotter. (KAREN T. BORCHERS)

Oakland installed ShotSpotter in 2006. "Unfortunately we have quite a few neighborhoods where people have grown numb to people shooting guns, and they don't call police," said Oakland police Capt. Ed Tracy.

While early ShotSpotter systems notified police command centers and dispatchers, Oakland's was designed to directly alert officers in patrols cars and the police helicopter to the location of gunfire - an increasingly common feature. In at least one instance, a gunman was arrested within minutes. Such dramatic, quick results are rare, Tracy said, "but what we can't measure is the value of citizens seeing us respond shortly after a shot is fired. It adds credibility for us as a police agency."

Such technology, ShotSpotter Chief Executive James Beldock says, dovetails with strategies inspired by the "broken windows" theory, which holds that criminal behaviors accelerate where vandalism, graffiti and others symptoms of dysfunction are not swiftly addressed.

San Francisco and East Palo Alto installed the system more recently. Physicist Robert Showen, ShotSpotter's founder and chief scientist, said it was East Palo Alto's crime troubles in the early 1990s that first inspired him to explore ways technology could be used to fight crime.

"I was hoping we could reduce gun violence," Showen recalled.

Showen was then working at SRI in Menlo Park, specializing in acoustic and radio wave research. He developed the system of combining triangulating sensors and global position satellite (GPS) technology to determine where gunshots had been fired - and could roughly distinguish those sounds from, say, a backfiring engine or powerful firecrackers. When the federal government decided against buying the technology and SRI's interest faded, Showen struck out on his own.

Redwood City purchased the first system, which then required phone lines. The technology worked well enough that police credited it with enhancing response times and, over time, reducing gunfire.

But despite considerable media attention, progress remained slow for Showen and partners Rob Calhoun and Jason Dunhman in their bootstrapped start-up. Showen, a Los Altos resident, took out home equity loans to keep the company going.

"My wife is still unhappy about the risk we took," Showen said with a laugh. "But it paid off. We're out there."

The company's fortunes changed in 2002 when Showen was approached by venture investor Gary Lauder, the rare Silicon Valley financier who was exploring technologies to help combat crime and terrorism.

"It was clear from their hand-to-mouth existence they weren't going to make rapid progress," he said.

Lauder put \$3 million of his own money into the company and recruited Beldock, who had led two other tech companies, as a consultant to help manage and build the company. Beldock later assumed the full-time role of chief executive.

Grim serendipity helped ShotSpotter as well. In late 2003, the tiny company was contacted by the FBI with a special case: Could its system help them find an elusive sniper who had been terrorizing motorists on a stretch of Ohio highway? One motorist already had been killed, and several cars had been damaged by gunfire.

ShotSpotter installed sensors along the highway and was able to pinpoint the origin of subsequent shootings, which helped investigators find shell cases and arrest the shooter.

The high-profile success "was a catalyst," Beldock said, that helped ShotSpotter attract new investors and ramp up its business. It worked with and later acquired a Georgia company that had complementary wireless patents and familiarity with the military market.

Inside a darkened room at ShotSpotter's Mountain View headquarters, a bank of computers and screens provides a demonstration of how the technology has collected gunshot data in east Oakland and Washington, D.C.'s southeast corridor.

With a click of the keyboard, ShotSpotter employee Dana Ray marked a satellite image of east Oakland to show the location of 69 discretely placed sensors that acoustically cover nearly five square miles of east Oakland. (Part of west Oakland is covered by other sensors.) Another click brought up a month's worth of incidents. "It looks like measles," Ray said.

She played the audio file of a gun battle - a series of small-caliber shots, followed by louder, large-caliber response.

ShotSpotter, now using wireless technology, costs about \$200,000 per square mile to install, and about \$30,000 per square mile to operate each year.

A large photo in ShotSpotter's lunch room shows one of its sensors at work in Iraq's Al-Anbar province. Beldock said he is restricted from discussing how U.S. forces are using the system in combat theaters.

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