

Video Helped Capture the Boston Bombing Suspects, But Is it Preventive?

Adam Stone | July 11, 2013



Everyone has seen the video by now. The Boston bombers, dressed similarly, toting their backpacks through the crowd, one behind the other. With such a powerful visual cue, it's easy to suppose that video played a crucial role in capturing the culprits.

That's true to a certain extent, because video images led to quick identification. And then there's the knee-jerk response: Let's hang a video camera off every lamppost in every major city, at every big event. Let's capture every face in the crowd and scan continuously for suspicious action.

And yet, most experts in the field are ambivalent. Is the technology good enough? Do we sacrifice too much liberty? Will the stuff even work? In a post-Boston world, [video surveillance](#) seems to raise more questions than it answers.

Crowd Management

For some in public service the presence of video surveillance is an undisputed good. In the U.S. Park Police, Commander of Technical Services Dave Mulholland talks about cameras as a powerful force multiplier. Considering the budgetary constraints on boots

on the ground, “this is something you have to do. It provides situational awareness. It provides you the opportunity to share with all your agency partners,” he said.

Since 2001, the Park Police has maintained video watch of the Lincoln Monument, Jefferson Memorial, Statue of Liberty and Golden Gate Bridge, which is anchored on public land. The service employs a hybrid system of CCTV on secure networks, along with tactical, mobile cameras feeding signal via the Internet. “That has opened up the possibility for me to now share those capabilities with other agencies,” Mulholland said.

These capabilities came into play during the Rally to Restore Sanity in October 2010 at the National Mall in Washington, D.C. When an expected crowd of 60,000 swelled to several hundred thousand, Mulholland used video to watch for surges and possibly dangerous conditions to manage the oversized crowd.

“If something happens, we want to see it, so that we know what resources to send to the scene,” he said.

An Ounce of Prevention

Beyond crowd control, public cameras also have been used as a means of [crime prevention](#). The Urban Institute cites Baltimore as an example, with more than 500 cameras installed in high-crime areas, mostly in a 50-block area in downtown Baltimore. Roughly four months after cameras were installed downtown in 2005, crime dropped by more than 30 incidents per month on average.

A Coordinated Medical Response

The medical response for between 150 and 200 people who sought treatment immediately following the April 15 bombings was efficient for various reasons.

The large number of emergency medical services personnel already on hand at the marathon finish line played a big role, as they were able to quickly coordinate patient care.

All hospitals used the statewide WebEOC system, a crisis management system with real-time updates, within minutes after the blasts to update data such as bed and staffing availability.

The explosions’ proximity to five Level 1 trauma centers meant that there was expertise on hand to treat just about any injury that came through the hospital doors. These hospitals have specially trained staff

that helped write the national protocols for mass casualties and disaster planning.

The elimination of ambulance diversions in the state a few years ago also was instrumental, as hospitals have learned how to coordinate patient-care needs when their emergency departments are full. This became crucial on Marathon Monday, when many hospitals received 10 to 20 injured victims within an hour.

All the hospitals have participated in citywide and internal drills to help develop responses to mass casualty events, and staffs were coordinated to ensure that there

were enough caregivers to handle the patient flow. Many off-duty doctors and nurses went to the hospitals to help their on-duty colleagues.

Source: Massachusetts Hospital Association

Other efforts have been less successful. Civil rights groups estimate that Britain has 20 percent of the world's CCTV cameras keeping a watchful eye over just 1 percent of the world's population, with more than a million closed-circuit surveillance cameras in London. Crime has declined significantly in recent years, but *The Economist* says this could be due to any number of factors other than cameras. The recession has curbed drinking, with fewer people able to afford the price of a binge, and items such as computers and microwaves have become so cheap that they are no longer worth stealing.

This leads up to Boston and a question that lies at the heart of the video surveillance debate: Will it work as a preventive? Would a few thousand cameras in potential hot spots deter a major occurrence?

Here the ambivalence kicks in.

One problem right off the bat involves the profound likelihood that people who commit acts of terror or extreme violence are not thinking clearly.

In the case of the Boston bombers, "you would think they had to have known that their picture was constantly being taken, and yet right afterward, they went right back to their normal life," said Joseph Young, associate professor at American University's Justice, Law and Society Department. "For the deterrent effect to work, you have to assume you have a rational agent, and that's a pretty large assumption. In these lone wolf domestic cases it doesn't seem like they are thinking these things through."

Some are optimistic.

"Any time we had any kind of a big event, things like the Chick-fil-A Bowl and the Peachtree Road Race, the emergency management people were right there with law enforcement looking for any type of hazardous activity," said Bill Hildebrand, a former Atlanta Police Department law enforcement professional and COO of NationWatch Protective Advisor in Loganville, Ga. "If video is used in a proactive role, and you have people monitoring the cameras who have been trained in recognizing crime trends and suspicious activity, then you can be proactive. When they see suspicious things going on, they can deploy assets to those areas."

The vote is more unanimous when it comes to forensics. Given patience and manpower, video footage can help unravel an event and catch the perpetrators.

In New Orleans, for example, video footage helped police to speedily identify an alleged shooter who injured 20 people in an attack on a Mother's Day parade earlier this year. And, of course, it was video footage that helped lead police to the alleged Boston Marathon bombers.

Some may say forensics sometimes is prevention. “Without video we would still be searching for those guys [in Boston], and they would already have done damage in New York City,” said Mark Collett, the general manager of Sony Electronics’ Security Systems Division.

Incidents like those in Boston and New Orleans make a strong case for the forensic use of video. But they leave open other questions regarding the technology itself: How good are these images? How well can video analysis techniques help in identifying individuals, objects and situations? How far has the technology progressed?

Not Yet CSI

The challenge is sizable. For a given moment in time, law enforcement officers and investigators may be faced with terabytes of data from every conceivable source, from department store surveillance cameras to cellphone video to digital photographs. Popular perception has it that with sufficiently powerful software, law enforcement could sift through all this data at digital speeds and successfully identify specific persons or objects. Reality, however, suggests otherwise.

“The first thing you have to do is to accept the idea that *CSI* is not really real,” said Detective Sgt. Ret. James “Gator” Hudson, vice president of CrimeDex Services at video surveillance company 3VR. “No one does that in real life. You may have a chief of police or an emergency management person who thinks the camera is going to pick out the face of a terrorist in a crowd, but those kinds of things are almost impossible to do. So you have to set the bar at reality.”

We learned this after the Boston Marathon bombing, when Boston Police Commissioner Edward Davis told *The Washington Post* that the department’s facial recognition system hadn’t been able to identify the bombers, despite the fact that both had official driver’s license and immigrant records in the system.

If recognizing faces is problematic, the search for objects is no easier. “We want it to identify an object left behind in a crowded environment, but as much as we would like to be able to solve that problem, differentiating a bag left behind versus an airport patron standing two feet away from their bag — the false alarm rate is too high for effective management,” said Warren Brown, president of video technology provider ObjectVideo.

Designing Systems

That’s not to say that facial recognition and object identification remain the stuff of science fiction. Various software products are available today that can conduct these tasks with varying degrees of accuracy. As with all technology, though, the real usefulness often is demonstrated not by the power of the tools, but by how they are used.

A video camera system is only as good as the sum of its parts.

“When people talk about camera, they think about a camera as a single entity, but the reality is it’s a network of systems, and the components on that system need to work together,” said Sony’s Collett. Sony has focused its efforts on image quality, which is a crucial element in any recognition algorithm. But those images still must be paired with powerful processing software, and few standards exist to make those pairings happen consistently.

More significantly, the camera and the software together don’t think like a law enforcement professional. In fact they don’t think at all. In order for the system to go the last mile, someone must program in the parameters. At what point, under what circumstances, will a real-time surveillance system send out an alarm?

“The software isn’t artificial intelligence,” Collett said. “You have to program the system to actually notify you of the conditions that you are worried about. This means that someone has to define those various conditions and define what actions need to occur by humans, and what actions need to be taken by other systems that may be integrated.”

Here the burden may well fall to the emergency management community. As the professionals most closely attuned to the broad spectrum of possible risk, “they can create the set of rules and conditions in their environment,” Collett said.

This begins not just with the analytics process, but also with the initial systems deployment. “It’s not just about picking a camera that may look good at 10 o’clock in the morning when the sun is shining to the left,” Collett said. “What about when the sun is shining straight overhead? It’s not just about megapixels. People who are making the selections need to think through the environment in which the camera is going to be in use.”

Incident Management

In return for these efforts, emergency managers may reap substantial rewards from enhanced video surveillance. A more thorough video feed to the command center, for instance, could enhance a manager’s ability to [monitor a situation](#) and respond to changes.

It could also stream video to first responders’ laptops as they head to the scene of an incident. “It can give them valuable insight into what they are going to be confronting once they get there,” said Rob Sprecher, North American practice director for public safety and justice at Unisys.

As technology improves, it will become increasingly possible to pair this broad situational awareness with specific details — a license plate number, for example — that could cue in first responders to the possible risk factors in a situation.

To reap those rewards, emergency managers will first have to make a compelling case for having cameras on the scene, and that may not be easy.

“Emergency management ultimately reports to the citizens of the community, and there will be some citizens who are absolutely against it, some who will be for it, and some

who will be for it but with limitations,” Hudson said. Suppose you want to put a pan-tilt-zoom camera on a street corner. That isn’t going to happen until you convince the neighbor across the way that the camera won’t be looking in her window.

Who's Watching?

Civil liberty advocates have been raising objections to the vision of a public environment in which every person and every action is observed and recorded. For some, London’s pervasive ring of video surveillance looks deeply Orwellian.

These fears only grow worse with the proposition that drone aircraft should be used for surveillance. Boston’s police commissioner has said he wants unmanned aerial vehicles for next year’s marathon. With the public already perceiving drones in primarily a military context, the use of unmanned aerial vehicles for video surveillance is raising hackles.

Some see potential for compromise. The public agreed to give up some liberties when airport metal detectors proved they could curb terrorism. It’s possible that successes by video surveillance could similarly sway public opinion in favor of more video.

“The debate has a lot to do with who has access to those feeds, and who is watching those watchmen,” Young said. “If you lack faith in the government’s credibility to watch out for your interests, the more you suspect whether this is a power that is reasonable for government to have.”

Here again it may be up to the emergency management community to steer the ship.

“What are you capturing, who has access to it and what will you do with it?” Brown said. “If the only place this is being used is in the first responder community, and the only time they can access it is when they are addressing a crisis, then there are ways to manage that issue.”

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<http://www.govtech.com/public-safety/Video-Helped-Capture-the-Boston-Bombing-Suspects-But-Is-it-Preventive.html>