For the Record: Understanding the Technology Behind Body Worn Cameras

BY: Tod Newcombe | September 8, 2015

***Editor's note**: This is part of of a three-part series in which* Government Technology *looks at some of the key technological questions that confront local jurisdictions as they weigh the costs and benefits of police worn body cameras.*

It's been a year since the shooting of unarmed black teenager Michael Brown, which sparked riots in Ferguson, Mo., that lasted for days. In that short time span, a number of other deadly incidents involving young black men and police officers have occurred, triggering a national debate about the use of deadly force by police officers.

At the same time, another discussion has emerged, one that put forward the idea that creating a record of interactions between the police and the public might defuse simmering disputes, improve officer safety and mitigate allegations of racial profiling. The idea of using cameras to record interactions isn't new. In the past decade, police departments have installed more than 17,500 cameras in police cars, according to the International Association of Chiefs of Police (IACP).

But a program where police wear body cameras to record their interactions is still a rather new, and little-tested concept. Two years ago, only a handful of police departments used body worn cameras (BWC). Today, there are various estimates that put the number of law enforcement agencies using, or investigating BWCs at as many as 6,000 out of 18,000 nationwide.

The huge jump in interest has elevated what was once a niche technology for public safety into a major growth market. The federal government has pushed it further with $20 million in grants to fund BWC pilot projects. The grants are part of President Obama's proposal to invest $75 million over three years to purchase 50,000 body worn cameras for law enforcement agencies.

HOMELAND SECURITY WEIGHS IN ON BODY WORN CAMERAS

The Department of Homeland Security (DHS), which established the System Assessment and Validation for First Responders Program to objectively assess and validate commercial equipment, came up with the following recommendations for BWCs:

1. An image resolution of at least 640 x 480 pixels.
2. A frame rate of at least 25 frames per second.
3. A battery runtime that allows a camera to record continuously for at least three hours.
4. The camera's onboard storage, set at the lowest video quality setting, should be able to capture a minimum of three hours of recording.
5. The camera should have a low lux rating to allow for recording events in low light.
6. System should have a minimum one-year warranty.

DHS provides some more specific issues that police should consider when choosing a type of camera:

"Standard cameras are likely to have image quality issues (e.g., fuzzy pictures and poor quality at night) as compared to more high-end cameras due to technical compromises to manage costs. There can also be quality

Driving the growth in BWCs are many benefits that go beyond the accountability of police officers and the public. They include transparency, increased professionalism, more peaceful civil interactions and even potential cost savings on internal affairs investigations into possible wrongdoing by officers as well as settlements of lawsuits stemming from the use of excessive force. Every year, law enforcement agencies spend hundreds of millions of dollars to settle claims. New York City spent $348 million on settlements and judgments between 2006 and 2011, according to the *Huffington Post*. Chicago spent a whopping $521 million between 2004 and 2014. The list goes on.

As quickly as interest in the technology has grown, so too have the questions surrounding both the policies needed to govern a workable BWC program, and the technology that would make recording and retaining these police interactions a feasible solution. Like any technology project, BWCs can impact a range of systems, and require project management skills in order to avoid failure. Besides evaluating the attributes of the cameras

issues with stability. For example, when an officer is running or fighting, the video may be shaky and the camera may not be secure; this again links back to placement of the camera on the officer being extremely important. Some feel that head camera placement allows the head to act as a natural gyroscope to reduce some motion issues seen with cameras."

themselves, CIOs face a major issue in terms of video storage. The amount of data generated by digital video is huge, making storage costly. The use of cloud services as a storage option raises a host of issues that local CIOs are just beginning to grapple with.

BWC systems will also impact other IT systems used by police departments, including but not limited to computer aided dispatch, records and evidence management systems, content management systems and so on. Then there are concerns around security, support and training. Finally, and perhaps most importantly, there's the question of cost. Data storage costs can reach $2 million annually for a police department, according to the Police Executive Research Forum.

Local CIOs will have a host of considerations to sift through when their jurisdiction decides to implement a BWC program in the police department. This three-part series will walk through some of the key technological questions that confront local jurisdictions as they weigh the costs and benefits of body cameras.

IT STARTS WITH THE CAMERA

In 2006, police officers in the United Kingdom tested body cameras and found that the technology enhanced the collection of hard-to-refute evidence and resulted in fewer cases going to trial. In 2012, a similar field test took place with the Rialto, Calif., Police Department. The 12-month experiment randomly tested body cameras on officers during their shifts. The cops used cameras from Taser International, which were water resistant, captured video in full color and had a battery life of 12 hours. The test results were startling: When the cameras were turned on, use of force by officers dropped 60 percent and complaints against the police fell nearly 90 percent.

These early positive results have opened the floodgates to BWC programs across the country. As CIOs and police departments begin to evaluate the systems that can capture and store video, the cameras themselves provide a glimpse at the complexity in options that have to be weighed, both from a field operations perspective as well as from the impact on policies that govern how and when cameras and videos are to be used.

Overall, the camera hardware can be light (cameras used by Rialto police weighed just 4 ounces). Their light weight enables officers to wear cameras in a variety of positions: head, shoulder or chest, for example. In Rialto, the police tried different types of gear and eventually found they liked cameras that fit on their sunglasses or cap. One advantage of a head-worn camera is that it will record what the officer is looking at, while chest or shoulder-worn cameras only record what's in front of the body.

BY THE NUMBERS

60%

the reduction in police use of force during a 2012 body worn camera pilot in Rialto, Calif.

In 2013, the Phoenix Police Department evaluated the impact of BWCs and used the following parameters when they procured cameras for the officers:

"In terms of the physical characteristics of the camera, the device could not weigh more than a total of five ounces. Also, it had to be able to record and store at least four hours of video, with a battery life of eight hours. The PPD (Phoenix Police Department) was also insistent that the recording indicator was visible to officers in the field, and that police would have the ability to view the recently recorded video footage on the scene of an incident. The field of vision of the device needed to be at least 50 degrees. The department also wanted officers to have the ability to turn off the night vision function, if there was one, and to be able to change the placement of the device to several locations, including the ear, shoulder and lapel. Finally, there could not be more than two wires on the device, and it would need to have the capacity to automatically label video files with the date and time of the recording."

The Phoenix Police Department tested different camera models. Some of the findings showed officers could get confused with camera features like the pre-record option on some cameras, which retains 30 seconds of video prior to an officer activating a recording. Many officers found this option to be a liability, according to a 2015 report, Evaluating the Impact of Officer Body Worn Cameras. Officers also had trepidations about cameras equipped with night vision capabilities. Apparently some officers believed courts and prosecutors

would view much clearer images of what happened compared to what officers actually saw, putting their personal conduct at risk in terms of how it might be judged.

Findings from the PPD study showed officers were much likelier to agree that the camera is easy to use (61.8 percent), comfortable to wear (57.6 percent), and that its battery life is adequate (65.6 percent). The officers were much less likely to agree that it is easy to locate and retrieve a video for a specific event (26.5 percent) and that it's easy to download data at the end of the shift (23.5 percent).

Next up: How BWCs impact storage and evidence management; and the rising role of cloud solutions.