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New in-car Computer Technologies in Police Vehicles Benefit NOT Distraction

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By
Craig T. Matthews

Midland Police Department
Midland, Texas
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ABSTRACT

This paper discusses equipment in today's law enforcement vehicles and how it can divert attention away from safe driving. This is a problem for the police officers who intend to be an example of safe drivers to the public. The increase in new technology being placed in the patrol vehicles has a tendency to distract the police driver from his or her concentration on the roadway and could result in damage to property, or worse, injury to people. Also in this paper is an example of a Texas police agency, that over a three year period, had 18 police car involved collisions that cited distracted driving as a cause (indicating this is a real problem) (Friedman, 2012). The majority of scientific works cited in this paper involve the average driver engaged in texting on a mobile device while simultaneously operating a vehicle. In order to reduce the incidents of future police car involved collisions, this paper discusses real ideas to implement in order to minimize distractions or reduce the likelihood that these distractions will demand inattention to the roadway, resulting in a safer police officer and community.

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INTRODUCTION

Today's law enforcement officers are using new and innovative ways to combat criminal activity, and technology is a part of the solution. Police vehicles have mobile data computers (MDC), radars capable of detecting moving vehicle speeds, mobile video camera recording systems (MVR), and police radios. This technology is essential for law enforcement officers' safety and is an enormous benefit for the law enforcement profession. The laptop computer provides law enforcement officers with detailed information in seconds, the ability to write reports in the field, and access to detailed maps which provide help in getting to locations. Other technology like the moving radar is essential in detecting hazardous behavior from motorists and police radios help provide communication between essential personnel.

This equipment is important because it can be the difference between life and death. Law enforcement is inherently a dangerous job and the speed with which detailed information is provided is important. Mobile video equipment captures events as they happen. These events include not only criminal activity in progress, but also situations that may seem unimportant at the time, but may clear an officer later of wrong doing. The audio portions of the video recording also help even though the event takes place away from the view of the camera.

The laptops utilize computer aided dispatching (CAD) and the records management system (RMS) to expedite the information from and to the officer. This data is obtained almost instantaneously. Its ease of use provides benefits to the dispatch staff because information can be provided to an officer while the dispatcher is still talking to the caller on the phone. The information provided also enhances officer

safety due to possible misunderstood communications. The technology provides increased efficiency and productivity. An officer can simply run a license plate by the push of a button or check a person to see if they are wanted, and again the response is almost immediate. Laptops allow for more efficient work shifts and decrease overtime costs (Acker, 2007). Basically, the police car is now a high tech office for the patrol officer. The technology allows the officer to conduct almost all of his business while still in the field or in the area of his immediate responsibility. When the officer is at the station conducting administrative work, it takes longer for the officer to get back out to the field and handle calls for service and other police work. In turn, this also provides increased visibility because the officer can park in a parking lot near an intersection and catch up on paperwork or conduct searches for wanted persons.

The benefits of mobile technology in police vehicles should outweigh the risks caused from the distractions that the technology potentially affords. Technology is ever changing and the benefits are constantly changing too. These benefits equate to innovative and more efficient methods of conducting police work. Sometimes the technology needs fine tuning; however, it is the technology and the officer training to properly use that technology that makes it so beneficial.

POSITION

The first benefit that the mobile technology provides is detailed information in seconds (Richtel, 2010). Many different software options exist but each uses a wireless connection. The wireless connection is often a cellular data connection; however, some departments are using Wi-Fi type technologies. Computers are used for direct queries to the department computer aided dispatching / records management system

(CAD/RMS) (Byrne & Marx, 2011). The queries provide instantaneous data retrieval. Calls for service can be entered by the dispatcher and sent to the officer with all the details including warnings that have been entered for the address to which the officer is responding (i.e., dangerous dog that bites). The computer, in turn, reduces communications workload for dispatch staff that often multi-task many different responsibilities. The type of information and the amount of detail is also very important to consider. A check of a person to see if they are wanted on the computer will return warrants; driver's license history; and a description of the person and their address information. Many times, software allows the user to review in-car digital video, take photographs, and record incidents both with video and audio.

Another benefit of the laptop is allowing the officer to complete detailed reports in the field and send that information to a designated printer or to the department server for records retention (Sullivan, 2012). This increases efficiency and productivity because the officer can stay in the field, continuing to be a visible deterrent for criminal activity and be able to respond more quickly to calls for service. Along with completing reports in the field, the officer can also search for reports in the field. Software also makes it possible to attach photographs and other important details to a report.

Yet another benefit of the computer technology is the mapping software (Hess, Orthmann, & Cho, 2013) many of the software applications can give directions as well as recommended routes. Some of the software companies have made the technology speak the directions and is capable of integrating with the CAD/RMS software. Officers are able to zoom in on software applications and see the layout of the land. Many applications are integrated with global positioning systems (GPS). The GPS software

allows the dispatchers and other officers to see where local police patrol units are and coordinate response using that data. The cameras and GPS also deter unacceptable behavior on the part of the officer.

Another useful type of technology the officer deals with inside the police car is the moving police RADAR (RAdio Detection and Ranging) (Skolnik, 1962). These devices are capable of finding a target (detection) and calculating its speed. The technology requires the officer to recognize the vehicle (detection) and visually determine that the vehicle appears to be speeding–the moving RADAR unit simply confirms the officer's visual judgment. The sizes of the RADAR antenna and counting unit have continued to get smaller over the years and take up much less space. Even the control for the unit can be a remote much like the remote for a TV.

The last technology type that is remarkable for the passenger compartment of the police car is the police radio. This technology has changed considerably over the years. The police radios used to be quite large with the analog systems, but now the radios are digital and are capable of transmitting data and utilizing voice applications. The police radios are still limited, however they continue to be the most immediate and used device for communication to multiple persons. The only actions taken are to push a button to activate the microphone and speak. Any replies will be heard through the speaker. Motorola is introducing radio technology that transmits data over a public safety LTE network, which operates at 4G network speeds (Takahashi, 2012). A lot of this technology can also be integrated with the Ford Fusion police interceptor vehicles. Other technologies like the GPS seem to be able to repeat or backup the information

received on the police radio. However, the computer doesn't have to take turns to speak or be heard.

Each one of these technologies has enormous capabilities that are proven to benefit the officer in multiple ways (Domash, 2006). Mobile computing, being one of the most susceptible to distracting the driver, has multiple advantages. Many of these technologies are emerging with updated software and capabilities to improve safety and reduce the chance of the officer/driver becoming too distracted for safety's sake. Motorola Solutions is introducing broadband connectivity for real time solutions for police officers. The software touts first responder technology that has touchscreen displays and can be operated via voice commands. Being virtually hands free allows the operator to focus on the roadway while moving. The system is integrated into almost all the functions of the police vehicle. The officer can give a voice command and unlock a rifle or turn on the siren and emergency lights (Takahashi, 2012).

COUNTER POSITION

Mobile devices in general, if being used by the police driver while the vehicle is moving, are distractions and may be considered dangerous. The Arlington, Texas Police Department had 18 police involved crashes where a police officer was distracted and a causation of the collision, during a three year period (Friedman, 2012). Those numbers suggest that police officers are incapable of multi-tasking while driving safely. Driving is a complex, multitask activity (Hurts, Angell, & Perez, 2011). It is recommended that police departments need to develop policies that address all the distractions in the police car while the vehicle is in operation. A policy would complement the safety factor of police officers. An examination of auto liability claims

from 2006-2010 of accidents where the officer was at fault revealed 378 accidents in Minnesota and 53 accidents listed the contributing factor as distracted driving, with 26 being the car computer. The average cost for those damage claims was $10,000 dollars (Michael, 2012). A study conducted by The National Highway Traffic Safety Administration (NHTSA) indicated that driver distraction was associated with the most unsafe levels of driving performance (Ranney, Baldwin, & Parmer, 2012). The diversion of attention away from the driving task that relies on the secondary task is the problem (Hosking, Young, & Regan, 2006). According to the NHTSA study, the chart below shows the average amount of time in seconds that the focus was taken away from the roadway while conducting the secondary task.

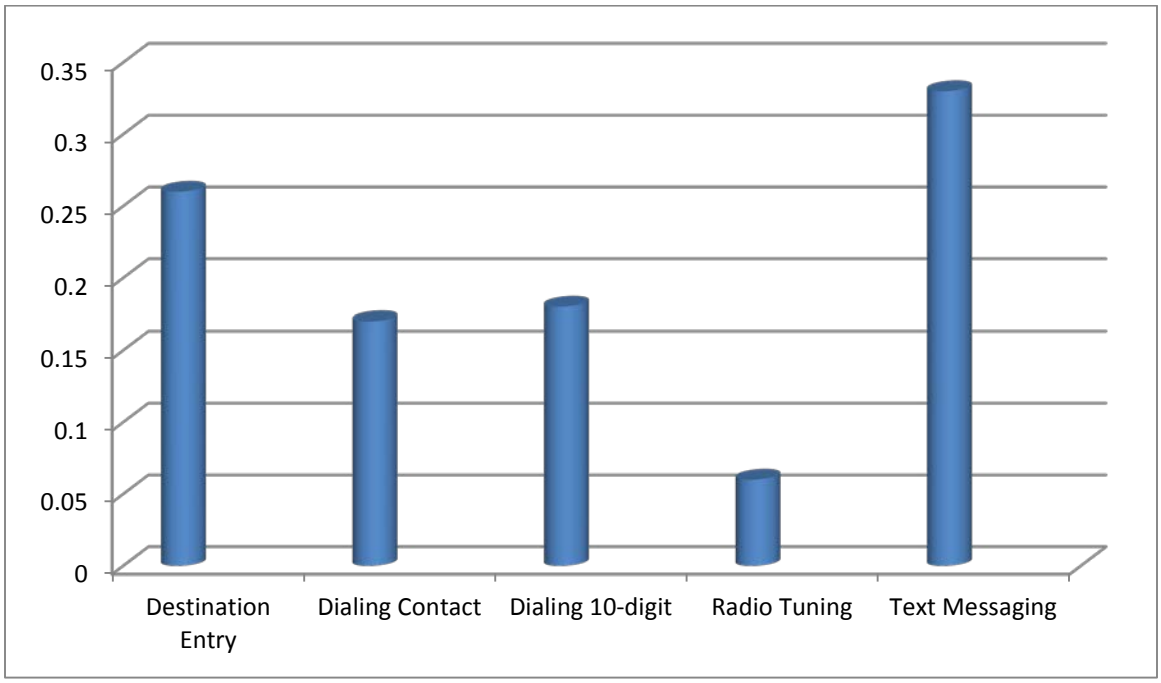

Figure 1. The average time of inattention caused by the secondary task listed while driving.

Text messaging took the drivers attention away for the longest amount of time. This could easily be compared to typing information on a laptop computer while driving. The study itself does not answer the question if typing information into a mobile device is a direct cause of motor vehicle crashes, but it does indicate that it is a distraction from what is important, driving safely. In 2013, police vehicles were involved in distracted driving crashes. According to C.T. Thomas, a Traffic Safety Specialist III with the Texas Department of Public Safety (personal communication, February 18, 2014) reported that of the 2,035 crashes reported in Texas involving police vehicles, 153 involved a distracted driver.

In rebuttal to this argument, the distraction while driving can be addressed in two ways. First, the department can implement training to show officers that the distraction of using the mobile equipment while driving causes the driver to become distracted and how to avoid that. (Novesky, 2012) This can be answered by implementing software that is currently available to deactivate touch key operations when the vehicle is traveling 15 mph or greater (Rose, 2012). Second, it can also be addressed by implementing department policy that regulates the behavior to increase the likelihood that officers who disobey policy will face disciplinary action.

A second counterpoint is that the technology has reliability issues. In other words, there are things that make the technology inoperable when it is needed. Computer viruses, cellular signal strength and network issues cause the technology to fail (“How to get,” 2009). Technology is constantly changing and improving, so the likelihood that the anti-virus software will eventually stop this problem is always something to look forward to. The cellular technology has made tremendous leaps and

the transmission of data is getting much better, including the use of radio waves instead of the wireless 802.11 Wi-Fi connection. The 4g LTE is now transmitting data at rates that are comparable and sometimes better than the Wi-Fi type connection. The network issues are dependent on the preparedness of the department information technology (IT).

A third counterpoint is the negative perception of officers using the mobile technology while laws and ordinances are being passed to stop the public from using mobile devices while driving. Several news organizations are running stories trying to "police the police" on the distracting in-car computers (Larson, 2013). These include numerous negative blogs that enrage citizens to no end. A NBC station in the Dallas - Fort Worth area ran a story accusing the Arlington, Texas, Police Department of ignoring the problem that the distracted driving causes. The Arlington PD is now looking into things that they can do to avoid this negative criticism.

Several things can address this problem in a positive light. Police departments need to re-evaluate their policies and create policies that show dedication to officer safety, as well as safety of the public, by finding the balance between technology's risks and benefits they also need to look at upgrading the current technology with safety minded software. The software is available and offers the perfect balance of risk and benefit (Richtel, 2010). Departments should provide continued education to officers along with constant reminders of department policies and employing general common sense when using the technology.

RECOMMENDATION

The technology used in today's law enforcement vehicles is very important to the continued attempt to triumph over crime. The instantaneous messages from dispatch describe in detail the location of the call; the important details of the call; the directions on how to get to the call from the current location; and any alerts or previous 911 calls at this call location or phone number. The benefits of being able to have the office go with the officer, so that they can stay in the field and be visible to deter criminal behavior and get to calls more quickly are that the officer will save time, reduce expense, and reduce waste. The evidential value of the police RADAR and in-car camera system is tremendous. The officer can rely on the RADAR speed measurement and slow down drivers, which can save lives. The in-car video can be used as proof of criminal behavior or to clear the officer of alleged misconduct. The police radio has been updated to digital technology and has improved communication efforts.

All of this technology should be followed with department policies that balance between technology's risks and benefits. Training that is geared toward public safety for police officers that operate cars with technology in them. Software packages also provide reinforced safety goals limiting technology under specific conditions. Also, the voice recognition software, if implemented, can simplify work and make it easier to multi-task for anyone.

This paper recognizes that innovative technologies improve officer safety and significantly improve officer reliability; however, the complete restriction of this technology while in a moving vehicle for a police officer can also restrict officer safety. There is a balance between the risks of using the technology that is needed and officer

safety. The solutions are good working policies, increased officer education and improved technologies that are geared toward improving officer safety while in a moving vehicle (i.e.: voice recognition software and GPS restrictive software that doesn't allow input while certain conditions exist). The law enforcement job is already dangerous and everyone needs to work together to achieve better work practices and overall safety. This is important to our communities and our citizens.

REFERENCES

Acker, M. (2007, March 8). Laptops in police cars increase productivity. Retrieved from http://sub.gmnews.com/news/2007-03-08/Front_page/060.html?print=1

Byrne, J., & Marx, G. (2011). *Technological innovations in crime prevention and policing.* Jaargang: Cahiers Politiestudies.

Domash, S. F. (2006, February 6). Laptops in patrol cars speed up the process. *New York Times*. Retrieved from http://query.nytimes.com/gst/fullpage.html?res=9C07E3DC1E3EF935A15751C0A9609C8B63

Friedman, S. (2012, November 5). Arlington police changing driving policy following NBC 5 investigation. *NBCDFW.com.* Retrieved from http://www.nbcdfw.com/investigations/Arlington-Police-Changing-Driving-Policy-Following-NBC-5-Investigation-177060531.html

Hess, K. M., Orthmann, C. H., & Cho, H. L. (2013). *Police operations: Theory and practice.* Clifton Park: Delmar, Cengage Learning.

Hosking, S., Young, K., & Regan, M. (2006). The effects of text messaging on young novice driver performance. Retrieved from http://www.distraction.gov/downloads/pdfs/effects-of-text-messaging.pdf

How to get better cell phone reception. (2009, December 9). *Digital Trends*. Retrieved from http://www.digitaltrends.com/how-to/how-to-get-better-cell-phone-reception/#!0ZIEe

Hurts, K., Angell, L. S., & Perez, M. A. (2011, September). The distracted driver: Mechanisms, models, and measurements. *Reviews of Human Factors and Ergonomics*, 3-57.

Larson, J. (2013, December 24). *Local 2 Investigates: Police crashes caused by distracted driving*. Retrieved from http://www.click2houston.com/news/police-crashes-caused-by-distracted-driving/23157400

Michael, J. (2012, May 21). Investigators: Squad car tech causing distracted driving officers? Retrieved from http://www.myfoxtwincities.com/story/18572893/investigators-squad-car-tech-causing-distracted-driving-officers

Novesky, P. (2012, May 22). In-car computers and officer safety. Retrieved from http://www.policeone.com/police-products/police-technology/mobile-computers/articles/5587174-In-car-computers-and-officer-safety/

Ranney, T. A., Baldwin, G. H., & Parmer, E., (2012). Distraction effects of in-vehicle tasks requiring number and text entry using auto alliance's principle 2.1b verification procedure. Retrieved from http://www.nhtsa.gov/DOT/NHTSA/NVS/Crash%20Avoidance/Technical%

Richtel, M. (2010, March 11). *Gadgets in squad cars pose 'growing danger' to cops, International Herald Tribune*. Retrieved November 7, 2012, from PoliceOne.com News: http://www.policeone.com/pc_print.asp?vid=2017793

Rose, C. (2012, August 29). No more typing and driving for FWPD. Retrieved from http://www.indianasnewscenter.com/news/local/No-More-Typing-And-Driving-for-FWPD-167906865.html

Skolnik, M. I. (1962). *Introduction to radar systems.* New York: McGraw-Hill Book.

Sullivan, P. T. (2012, February 6). Cape police more efficient with in-car laptops*. Southeast Missourian.* Retrieved from http:/www.semissourian.com/story/print/1812598.html

Takahashi, D. (2012, October 10). Motorola's futuristic police car is loaded with computers and cameras*. VentureBeat.* Retrieved from http://venturebeat.com/2012/10/22/motorolas-futuristic-police-car-is-loaded-with-computers-and-cameras/