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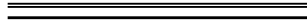
## Use of Virtual Technologies by Police Departments

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## A Leadership White Paper
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# ABSTRACT

In many police organizations today, there exist a number of geographic disparities or limitations that may inhibit effective training, meetings, and briefings from occurring.  These limitations include cost of travel and accommodations, distance between locations, and managing or establishing a facility to properly accommodate groups.  Some of these geographic disparities affecting police agencies may include, but are not limited to, a larger agency that may have several satellite reporting locations, smaller agencies that may need to travel some distance to receive mandated or relevant safety or development training, or any agency that may need to coordinate regional, state, or national meetings, briefings, or training initiatives.

In the economic environment facing most government agencies, cutting expenditures and providing an appropriate level of service are high on the to-do list.  By utilizing a technology and practice that is currently in place on a limited basis in industry and educational institutions, police agencies can benefit by enhanced opportunities for training and collaboration with little or no additional expense.

Police departments should incorporate virtual technology to supplement and support training, meetings and work/discussion group needs of the agency.  Private industry, educational institutions, and other organizations are currently developing and utilizing this technology to increase productivity and output and decrease expenses.  Police departments are beginning to explore these options on a limited basis.

The information used in exploring the virtual technology and police department connections includes books, journal and articles.  Although there are limited specific references to police agencies utilizing virtual technologies, the majority of the

information reviewed has been documented and applied to private industry and educational institutions.  The procedures and practices developed by these organizations can be adapted and applied to police operations.

There has been a significant body of research recently conducted that explored the use of virtual technologies in markets outside of policing, including Bell and Trueman (2008a) and Twining (2009) documenting educational institutions currently involved with virtual training, especially avatar based protocols.  Also Ferris and Godar (2006b) discussed virtual teams and how they harness the power of collaborative learning.  This paper identifies the research and defines and explains the private sector and educational institution applications developed and how they can be applied to police services.  This research showed that most police agencies can adopt virtual technologies with minimal expenditures by using on hand hardware and software solutions.  In support of this, Cowper and Buerger (2002) explored augmented reality technology or virtual reality and its use in police applications with economies of scale.  By adopting virtual technologies, police departments may notice an increase in training received by personnel, more information exchanged between agencies, and reasonable costs associated with acquiring these advancements in safety and security.

The documentation and research support the idea that police agencies worldwide should adopt virtual technologies to expand their global connectivity, standardize, and accentuate common police practices.  Utilizing the virtual platform will aid in facilitating meetings, briefings, and training to enhance the overall quality of service being provided by the agency.  Cost will not be a significant factor since much of the technology and equipment needed is readily available to most agencies.

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# INTRODUCTION

Virtual technology, which includes video, virtual reality, computer simulation, and three-dimensional applications, is an emerging market within the global business community being utilized to conduct meetings, work/discussion groups, and training between geographically disparate groups.  Private industry and educational institutions are both developing applications for this technology and have documented successes with its use.  Police departments will benefit from adapting this technology to meet law enforcement needs.  There are a variety of applications and scenarios incorporating the use of virtual technologies that can be adapted to small, mid-size, and large police agencies.

Police departments should incorporate virtual technology to supplement and support training, meetings, and work/discussion group needs of the agency.  Private industry and educational institutions are currently developing and utilizing this technology to increase productivity and output and decrease expenses.  Some private training applications are being developed to support police training in active shooter scenarios and large police agencies with geographically diverse reporting locations for officers and staff would benefit from having virtual roll calls and training issues delivered simultaneously and uniformly.  Mid-size and smaller agencies would benefit from coordinating training initiatives over disparate geographical areas to bring quality instruction at significantly decreased expenses.  Agency heads could participate in national or global meetings and committees to address issues and concerns affecting all law enforcement agencies and their planning efforts.

There has been a significant body of research recently conducted that explored the use of virtual technologies in markets outside of policing. Bell and Trueman (2008a) and Twining (2009) documented educational institutions currently involved with virtual training, especially avatar based protocols.  Also, Ferris and Godar (2006b) discussed virtual teams and how they harness the power of collaborative learning.  This paper identifies the research and defines and explains the private sector and educational institutions and their findings and how they can be applied to police services.  For instance, Heider (2009) has researched the use of simulated avatars to enhance the efficiency of meetings, especially where geographic disparities make face to face interactions unfeasible.  Bell and Trueman (2008b) continued with the conviction that avatar presentation in virtual worlds allows a social presence that is missing in other online courses.  Additionally, most police agencies can adopt virtual technologies with minimal expenditures by using on-hand hardware and software solutions (Cowper & Buerger, 2002).  By adopting virtual technologies, police departments will notice an increase in training received by personnel, more information exchanged between agencies, and reasonable costs associated with acquiring these advancements in safety and security.

Police departments and law enforcement agencies worldwide should incorporate virtual technologies that include video, virtual reality, computer simulation and three-dimensional applications to conduct training, meetings, and work/discussion group activities.  The cost savings could be significant when compared to potential expenses for travel, lodging, and the hosting venue.  Reducing these costs will allow for increased

individual training opportunities as well additional opportunities for geographically diverse or isolated organizations.

## POSITION

Virtual technology can be a low cost alternative to traveling for training, meetings, and discussion groups within geographically dispersed police agencies. Mahar and Mahar (2009) claimed that business travel is being reduced and, in many instances, replaced by virtual-world meetings. Virtual-world meetings can be arranged to accommodate two to two hundred individuals. Cost conscious companies are using this real-world alternative to generate real savings in travel and accommodation expenses. The process to setup and conduct conferences and meetings that once were very time consuming and costly can now be accomplished for a fraction of the cost utilizing technology and equipment readily available in many locations.

In looking at Heider (2009) and Young (2010), internal based virtual worlds have received the moniker Web 3-D and are considered places where people can create their own 3-D personalities. Second Life is one of the more popular virtual worlds available to consumers. Change is occurring in the development of these 3-D environments that may seriously impact the way people cooperate, communicate, collaborate, and conduct business. The recent number of companies taking advantage of the online marketing opportunities in areas such as Second Life includes Toyota, American Apparel, Nissan, and Adidas. While law enforcement may not have a need for marketing in a Second Life-type of atmosphere, the training and interaction possibilities are worth considering. Interactive training, which solicits and requires participation from individuals, would greatly support enhanced learning potential as well as retention of

subject matter.  Additionally, the ability to have a roll call or briefing would be an added benefit to law enforcement agencies.  In applying this process to law enforcement, particularly those with geographically disparate or satellite locations, it provides a platform that enables connectivity between participants.  While this does not replace a face to face or personal contact meeting, it provides an emersion that mimics personal interactions.

Another reason departments should consider including virtual technology is that it will provide more opportunities to train police personnel at a reduced cost and improve the quality and level of service being provided.  Most police agencies can adopt virtual technologies with minimal expenditures by using on-hand hardware and software solutions.  By adopting virtual technologies, police departments will notice increased training received by personnel, more information exchanged between agencies, and reasonable costs associated with acquiring these advancements in safety and security.

In building a learning community in a geographically dispersed space, education and learning institutions are enabling and harnessing virtual technology to accommodate and facilitate this process (Ferris & Godar, 2006a).  The challenge occurs when the dispersed individuals attempt to interact with each other and the ability to learn may be diminished because of a lack of common context.  The use of virtual technology will reduce or eliminate the lack of context by providing an environment that is designed for active participation by students regardless of geographic or cultural locale.  The social and technical process of learning can be enhanced with web-enabled educational institutions.

Virtual technology will provide an innovative platform to provide enhanced training and meeting capabilities to police agencies. CISCO is using virtual worlds to improve internal collaboration (CISCO, 2007). These environments are used to "host meetings and to create virtual workspaces for employees who may be part of the same team but spread out over half a dozen countries" (CISCO, 2007, p. 3). CISCO uses virtual worlds to provide an interpersonal environment in trainings and meetings more so than that offered by emails or conference calls. Therefore, "holding business meetings in a simulated environment is not quite as glamorous as the depictions of virtual reality found in science fiction. But it makes a change from the usual drab meeting rooms" (CISCO, 2007, p. 4).

Learning in the global environment has made significant changes that have implications for virtual learning (Ferris & Godar, 2006c). Constructive learning and the life skill of working in teams is promoted in virtual environments by participating with virtual teams. This results in "team members working in virtual teams that are interdependent of each other and learning to become independent learners as an end result" (Ferris & Godar, 2006c, p. 38).

An emerging and powerful technology is Augmented Reality (AR). Cowper and Buerger (2002) stated, "Advanced AR overlays virtual (computer-generated) images onto a person's real-world field of vision or into a real-world experience in a way that improves and enhances the ability to accomplish a wide variety of tasks and assignments" (p. 29). AR or virtual reality technology is a useful tool in police operations for simulating events such as active shooters, hostage situations, and chemical or biological incidents. These simulated occurrences can be designed to

anticipate participants' actions and provide alternate scenarios based on participant responses. These virtual scenarios can be produced at a great cost savings, simulate actual events, be administered in a safe and controlled environment, and for private companies such as Laser Shot, Inc. and Firearms Training Systems, Inc., have developed firearms training simulators for many law enforcement applications. Their exercises include live weapons fire and simulated weapons fire scenarios, such as "shoot, don't shoot" hostage situations and confronting active shooters.

Another recent advancement in virtual technologies is the Mobile Augmented Reality Systems (MARS). This technology allows a participant to wear a backpack contained system that, while wearing a headset, inserts scenarios into the actual surroundings the participant is viewing. By utilizing three dimensional technologies, scenarios can be designed and implemented to provide real life training involving the physical environment in which the participant is working (schools, office buildings, hospitals, airports, etc.) (Cowper & Buerger, 2002).

## COUNTER POSITION

There may be resistance to accepting the use of this technology with claims of start-up and operating the system being cost prohibitive. Crucial components for creating successful global virtual teams and teamwork are communication and information technologies (Sessa & London, 2008). The design and execution processes and other concerns to be addressed in building virtual environments require information and communication technologies. These instruments are not straightforward and "they are inadequate unless well integrated and aligned with team

design, behavior, and collaboration and communication processes" (Sessa & London, 2008, p. 178).

The concern with internet security is presented as a problem that potentially affects all organizations utilizing online virtual representation.  The possibility exists for hackers or others with malicious intent to invade virtual environments and either create havoc, interrupt the process, or spy on police readiness.  Safeguards such as firewalls or other protective software that guard against these intrusions may not be fully effective (Kim, et al., 2004).

When researching internet security options, competent internet security is a multi-fold process (Garfinkel, Spafford, & Schwartz, 2003).  Information security means that it must be confidential, have data integrity, consistency, control, and audit procedures.  Detailed assessments of the potential risks should be utilized to identify threats.  Each organization must employ a policy that details internet security and maintain it throughout the organization.

While there may be resistance due to perceived costs being prohibitive for the technology, law enforcement agencies already possess the majority of the equipment needed to facilitate the virtual technology experience.  A desktop computer and access to the internet and participation in the virtual world is available (Russell, 2010a). Additional expense could occur if enhanced equipment is utilized in the form of projection screens, displays, and other visual components.  The purchase of a simple headphone/microphone component will usually be the largest investment.

Another reason among police agencies is the great reluctance to adopt change, especially when it comes to technological changes.  Bell and Trueman (2008a) have

found that training and education have their own concerns when it comes to locations and formats. Virtual training is no exception. The novelty of the format in which students and instructors are both unfamiliar form the greatest challenges.

The operational effectiveness of virtual technologies is questioned when applied to a police environment. With a properly graduated implementation plan, acceptance will be gained over time. Change is resisted by personnel particularly when it is unfamiliar or out of their comfort zone. Avatar presentation in virtual worlds allows a social presence that is missing in other online courses (Bell & Trueman, 2008b). Along with avatars, live audio adds another dimension to the experience. Along with these positive inclusions, virtual training using avatars incorporates the use of slide shows, video clips, and handouts to complete the experience. Environmental immersion is also a plus in virtual training since the virtual classroom can be designed to aid in conducive comprehension that may include a historic building or location to recreate the actual context of the study material.

Once this plan is fully implemented and training of personnel has been completed, a significant rise in operational effectiveness will occur. CISCO (2007) found that general increases in acceptance and functionality improve over time. Although there is an initial learning curve that must be overcome, once this threshold has been crossed, significant improvements in acceptability, functionality, and economy can be expected.

## RECOMMENDATION

Police departments and law enforcement agencies worldwide should incorporate virtual technologies that include video, virtual reality, computer simulation and three-

dimensional applications to conduct training, meetings, and work/discussion group activities. Private industry and educational institutions are currently developing and utilizing this technology to increase productivity and output and decrease expenses. Large police agencies with geographically diverse reporting locations for officers and staff would benefit from having virtual roll calls and training issues delivered simultaneously. Mid-size and smaller agencies would benefit from coordinating training initiatives over disparate geographical areas to bring quality instruction at significantly decreased expenses. Agency heads could participate in national or global meetings and committees to address issues and concerns affecting all law enforcement agencies and their planning efforts.

In many police organizations today, there exists a number of geographic disparities or limitations that may inhibit effective training, meetings, and briefings from occurring. These limitations include cost of travel and accommodations, distance between locations, and managing or establishing a facility to properly accommodate groups. By adopting and utilizing virtual technologies, these disparities can be lessened significantly if not eliminated altogether.

The counter positions of potentially large startup costs, acceptance of this technology by agencies and its personnel, and the possibility of little or no operational effectiveness are not valid when considering the applicability of virtual technology to police agencies. Many law enforcement agencies already possess the majority of the equipment needed to facilitate the virtual technology experience.

There are a few educational institutions currently involved with virtual training, especially avatar-based protocols. The New Media Consortium and the Alliance

Information Archipelago are two main sources used by universities and other education participants in Second Life to facilitate educational opportunities (Bell & Trueman, 2008a). Virtual teams harness the power of collaborative learning and students are afforded the opportunity to learn more of the content of the course than they would working independently. Students also learn teamwork skills. If learning institutions make good use of outcomes assessment techniques, they will have a better understanding of the needs of virtual teams and what is to be accomplished (Ferris & Godar, 2006a; Orvis & Lassiter, 2007).

In considering ethics within Second Life, an ethical code called "community standards" has been created. Additional contributors to the ethical standard in Second Life are the National Education Association, Association for Computer Machinery and the Association of Information Technology Professionals among others. One term generated through these ethics watchdogs is known as "griefing" and is defined as "purposefully engaging in activities to disrupt the gaming experience of other players" (Lamb & Johnson, 2009, p. 36). In other words, this describes users who create false situations or other virtual distractions that inhibit, mislead or otherwise lessen the experience of other participants (Russell, 2010b).

The documentation and research support the idea that police agencies worldwide should adopt virtual technologies to expand their global connectivity as well as standardizing and enhancing common police practices. Utilizing the virtual platform will aid in facilitating meetings, briefings, and training to enhance the overall quality of service being provided by the agency. The cost will not be a significant factor since much of the technology and equipment needed is readily available to most agencies.

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