

**Manipulative Holographic Communications (MHC) –
The next stage of human interactions in Law
Enforcement**

by

Lieutenant Dominic Yin
San Francisco Police Department

July 24, 2012

Command College Class 51

Imagine being able to communicate with anyone, anywhere in real time using life sized three-dimensional holographic images. Imagine also that all users will simultaneously have the ability to manipulate a common object and respond to each other regardless of the number of users. For example, one hundred different agencies could look at one new pistol, and each agency would be able to manipulate the weapon and all the other agencies would be able to see the change in real time, and manipulate the weapon as well. It would be as if we were able to fold space; through seamless applications of technology, we can project ourselves and our ideas anywhere, at anytime, to as many people as are interested. In this reality, consider the cost savings of not having to travel for business, education or entertainment. In addition to the costs not expended, think also of how the time saved can allow us to spend more time on the things that matter. The consequences of manipulative holography would be enormous to a broad variety of industries, from travel to petroleum, entertainment to public transit authorities; even to educational institutions.

In this time of continuing resource limitations, technology has already proven to be one answer to the delivery of critical services to law enforcement. As the tax base and associated revenues for municipalities diminish, the budget for law enforcement is directly and negatively affected. We are already seeing fewer officers working, and with less resources. MHC is designed to provide several critical law enforcement services to the public so that officers have more time to concentrate on violent crimes and crimes in progress.

MHC's Magic Performance

The term Manipulative Holographic Communications (MHC) describes the emerging technologies that would create a future as described above, and is the use of goggles-less 3D

images that can be simultaneously manipulated by numerous parties in real time and with concurrent audio communications.

As envisioned, MHC has the potential to fundamentally alter the landscape of doing business in all industries, including a number of long-standing processes in law enforcement. These processes include the taking of police reports, giving testimony, and attending mandatory certification training courses.

Current Developmental Status of MHC

A comprehensive seamless program of MHC has almost arrived. The technologies to drive its implementation are here. Specifically, the various sub technologies that are the fungible pieces of MHC are already here. For example, 3D technology without goggles is already available on the consumer market. LG, Samsung, and Sharp will have large screen goggle-less 3D ready television sets delivered to the consumer market later this year. Small screen screens such as the Nintendo 3DS platform has been available for over 2 years.

Another sub technology is former MIT researcher John Underkoffler's Spatial Operating Environments (SOEs). In an SOE, cameras and infrared sensor strips line the ceiling and translate hand gestures into commands. SOE's end goal is to harness a universal gesture based language that will allow for communication across multiple platforms. (Daly, August 2011). SOEs used in conjunction will already very popular voice recognition systems such as Apple's "Siri" can form the basis of MHC.

Voice recognition systems such as Siri are collecting a massive database of human behavior. Siri and its progeny go beyond "need" to "intent." Specifically, not what somebody wants, but why (Goldhammer, 2011). The resultant interface of these two already available technologies will allow the end user to have a seamless digital experience where a 3D avatar (a

digital representation of a real person) will be projected in a kiosk or other available space and have the capacity to ask the relevant questions for completion of the report and provide the end-user will follow up information. If the end-user is reporting a crime in progress, the avatar will immediately transfer the end-user to 911.

A move towards a pre-MHC era has already arrived. As of July 18, 2012, Redwood City Police has started a new program in which citizens can chat with officers online; if the citizen has Skype capability, then he or she can have a real time face-to-face conversation with the officer using their computer or mobile device. This 3-month trial has only cost Redwood City two hundred dollars to implement. (Lee, 7/18/2012). If we take that as a starting point, we could extrapolate and consider that digital kiosks might be about the same cost of a new computer and a goggle-less 3D television. These costs could be significantly defrayed by collaborating with private entities for development and support.

Implications on the Future of Policing

The use of MHC in policing can result in manpower resource savings. Agencies will save man-hours simply by conducting routine police business using MHC technologies. Let's take the most common police task of having to take a "cold" report with no known suspects. Instead of using a live police officer to take these types of reports, MHC police kiosks installed throughout the city will allow these reports to be taken by a three dimensional life-sized police officer "avatar" at anytime. The avatar could be programmed to speak any language, and also be culturally competent. The officer avatar would also provide specific follow up instructions based on the initial report.

For more complex reports or those that involve immediate police action, a live officer could come online and be projected in 3D to the individual kiosk in place of the avatar, most

likely without the person being aware of the difference. By having these kiosks, we would need fewer police officers to handle the more pedestrian task of taking “cold” reports. In fact, we may have a separate civil service class of non-sworn police service aides to take reports via MHC.

Victims of crimes may be more likely to come to a digital avatar, since it is confidential and there is no built-in judgment or shame. Simply, the avatar will guide the end-user to making a complete report of a criminal act in relative privacy. Furthermore, the end-user can go back to the kiosk at anytime to update or add additional facts. These MHC kiosks would be available at anytime. In fact, having these kiosks inside of stations would also alleviate the strain on police personnel resources.

In-service and Academy Training: In the realm of training, agencies big and small would be able to save training hours and have their officers devote more hours to serving the public. For example, the forty hours required every two years for continuous professional training could be broken into two hands-on days for topics such as defensive tactics and first aid. The remaining three days could be taken during the officer’s down time using MHC technology to train at each district station over the course of the standard two year training cycle.

Another additional benefit is that if the officer needs items to be repeated, MHC will allow for limitless repetitions. Officers would be able to gain new ideas because they would be able to see the training from all angles as provided by the 3D nature of MHC technologies. Moreover, MHC allows for consistency of training as all district stations, and bureaus will be given the same MHC training. A valid testing process will ensure that the learner has achieved the required knowledge, skills, and abilities.

These would all be improvements over the current state of training which is a lecturer in the front of the room and lecturing for the specified time. As for training from one academy to

another, MHC will allow for a far greater audience as all regional academies can engage in the real time training using MHC. All participants would be able to ask questions in real time and have all other participants share in the answer much like being live in a large classroom.

Additionally, once the training is recorded, it could be played over and over in different venues and time spans to accommodate shift schedules. For example, a use of force demonstration could be played in any law enforcement agency in the U.S. while simultaneously played at the International Law Enforcement Academy in Bangkok, Thailand. Furthermore, consistency of training would be guaranteed as the recording will play the same training on demand as many times as required by agency and/or individual needs.

Court Testimony: Once MHC is recognized by the court system, Officers will save countless hours from not having to drive to court, find parking, and burn gasoline in the process. Instead, Officers will be able to testify from each district station and each kiosk. Their testimony will be cataloged and recorded for review in each stage in the legal process from the original arraignment to trial.

Using MHC to provide testimony must first pass legal scrutiny and must be adopted at the highest levels of the judiciary and passed by the appropriate legislative bodies. In other words, will being able to see the officer testify in 3D in real time be sufficient to pass constitutional validity in regards to the 4th and 6th Amendments, and the due process clause of the 14th Amendment.

It is clear that the writers of the constitution had envisioned that a suspect had a right to confront his accuser. However, in the application of modern MHC technology, will a real time, 3D projection allow for this consistency in this clause. The framers of the Constitution were vague in the application of the rules, but not in the meaning of those rules. Here, would giving

the accused the opportunity to see each movement of the accuser in real time, in life-like 3D be sufficient? There is ample evidence that it would be deemed sufficient. Especially in light that the accuser would be able to immediately respond to any queries from the court, counselors, or the accused. Moreover, the accuser's actions could be recorded in perpetuity.

Even currently, the courts allow testimony via video whereby the accuser is in a safe and sequestered environment in especially egregious cases involving juveniles or those that are severely injured. Notwithstanding, it will still most likely require a test case to reach the U.S. Supreme Court in order to push the initial limits of MHC use in testimony.

Conclusion

The benefits of adopting MHC technologies are enormous and have the potential to change societal perceptions and expectations in regards to all service industries, and not just law enforcement. MHC by virtue of saving the already overworked officer from time in completing routine tasks such as reports, testimony, and providing and receiving training; MHC is providing for the continued ability of agencies to bring dedicated law enforcement services to the public. Agencies will once again be able to detail officers to focused crime prevention strategies, community based policing, and developing long lasting partnerships with civic, non-profit, and private entities.

Many of the moving parts of MHC technology are already here in the form of SOEs and voice recognition systems. It will be up to the progressive departments in conjunction with state and federal authorities to put together a comprehensive plan for the adoption of MHC technologies such that it becomes a consistent platform for all agencies to use and interact.

The impetus to begin the switch to MHC will be the draw of significant cost savings in the reduction of man hours necessary for currently routine tasks such as "cold" report taking,

providing testimony, and providing and receiving training. Once MHC is adopted, it will become the standard for all agencies to improve services and access to the public.

References

Daly, Steve (August 2011) Popular Science, “Hand Command, building a gesture driven digital interface.” Pg. 36.

Goldhammer, Gary (October 21, 2011). Death of the Keyboard, Apple’s Siri and the Semantic Web, Retrieved March 27, 2012 from Below the Fold:
http://belowthefold.typepad.com/my_weblog/2011/10/death-of-the-keyboard-apples-siri-and-the-semantic-web.html.

Lee, Henry K., (July 18, 2012) SF Gate, “Redwood City police use video-text chat.”
<http://www.sfgate.com/crime/article/Redwood-City-police-use-video-text-chat-3714948.php>.