HSDF BORDER SECURITY SYMPOSIUM

Organized in partnership with GSIS

November 13, 2019

Shown here: Mr. Robert Perez
CBP Deputy Commissioner

On November 13, 2019 the Homeland Security Dialogue Forum in partnership with GSIS hosted their annual Border Security Symposium. It was a unique opportunity to hear from nearly a dozen officials from Customs and Border Protection (CBP), Immigration and Customs Enforcement (ICE), and Department of Homeland Security (DHS) headquarters about technology requirements to advance the border security mission with perspectives from executives, operators, and technologists. Some of the recurring themes during the discussion highlighted the enormous value of data, especially after layering on machine learning and artificial intelligence applications to help inform the end users and agents in the field. Also, there are numerous opportunities to leverage technology in support of the mission across a diversity of operating environments—the components are thinking critically about how technology can reduce the burden on agents and provide them with additional capability.

Below are some key points from the program to help advance the understanding between industry and DHS about capability gaps and the role of emerging technology to achieve mission objectives.

Integration and information sharing are critical to success:

Integration can deliver additional capability, even within a component—for example, Border Patrol agents could take better advantage of programs within the CBP National Target Center with just a little additional training.

One recent success story when it comes to integrating data streams is agreement from leadership at CBP and the Transportation Security Agency (TSA) to use the same process and system for biometrics in the airport environment—for such a large organization, this is momentous for DHS, and will improve the experience of the traveling public.

CBP collects a lot of data, once analyzed the data becomes information, and information becomes knowledge, but only when it is shared effectively. A piece of information might lead to the arrest of someone, but it can contribute to a larger understanding of the operational and threat environment. These are two important considerations: access and different use cases when it comes to information.

Specific operational challenges that could benefit from industry input:

For CBP, around 90% of the data used to make an assessment about a traveler is government-owned and trusted—however, increasingly more information is available publicly and those data sources are not government collected or owned. How can CBP incorporate those additional data streams to help with decision-making?

For any industry solution, the ability to insert it into an existing system that is already fully functional and operating is important. Instead of offering up a new system entirely, industry should consider breaking-up the solution into smaller pieces so that agencies can determine which specific pieces they could utilize to meet mission requirements.

Solutions to support the CBP Office of Field Operations need to be mobile; officers are not always sitting behind booths at airports anymore or tied to a desktop computer, they are constantly moving around their environment and need devices they can take with them, this will continue to be a trend. CBP has begun to pilot a Team Awareness Kit, which is an app for a mobile device to seamlessly integrate systems and personnel by providing information from sensors for better situational awareness.

As biometric solutions continue to improve, it will only be a matter of time when the public can travel without physical documentation and rely on biometric indicators instead—DHS will need to plan how to adapt accordingly.

From left to right: Mr. James Gilley (CBP), Dr. Reggie Brothers (Peraton), Mr. Michael Hardin (CBP), Mr. Scott Shockey (DHS)

Mr. Carl McClafferty (Border Patrol)

The growth of e-commerce has presented some additional challenges for CBP. In the past couple of years, the volume of mail and consignment shipments has tripled and there has been movement away from containerized trade, which used to be the norm. For CBP, getting data as soon as possible to understand the supply chain and what is moving through the environment is critical to reducing risk.

Tethered Unmanned Aerial Surveillance (UAS) is a capability that can help CBP deal with challenging terrain where previously there was little visibility. To date, it has been difficult to find the right large-scale UAS technology. Part of the solution may include relying on smaller UAS technologies that are easy to utilize, but can also assist with detection and deterrence.

Counter UAS technology is something of interest for CBP, presently the majority of radar systems cannot detect small UAS making deconfliction near impossible. Complicating this problem is that small UAS are relatively cheap and disposable meaning that even if CBP can confiscate an adversary's drone, it is easy enough to buy another.

ICE has been applying machine learning in a number of areas relevant for law enforcement. One area that has been particularly challenging is figuring out person-centric or entity-centric resolution, no government organizations have succeeded at this yet and this is one area that would benefit from industry input. In addition, facial recognition technology is the biometric indicator that can have the most impact for ICE. The vast array of images collected from confiscated cell phones, social media, and other sources could be layered into the entity resolution piece.

CBP needs help getting data to the edge to support agents on the ground to provide them with situational awareness in isolated locations.

Having automatic, seamless communication between sensors, cameras, and other surveillance technology would deliver a lot more capability for Border Patrol agents.

Impact of emerging technology on data streams:

The outcomes produced from machine learning applications are not always trusted, especially as analysts like to see the raw data to understand how a certain determination is made.

Artificial intelligence applications are going to be the next step for CBP when it comes to inspection and detection systems and the ability to apply analytics to these data sources.

For ICE Homeland Security Investigations (HSI), much of their work revolves around data and enriching information by adding layers from other data sets. Much of their data sources are "dirty" meaning it can be challenging to make sense of the information for investigators, especially if the ultimate goal is to prosecute criminal organizations. The HSI Innovation Lab has been tasked with creating a more cohesive picture for investigators that sits on one platform.

The need for public-private partnership and coordination with international partners to enhance security at the borders:

Airport traffic is growing around five to seven percent per year, while that may not sound like a lot, year over year that number will be very significant. At this rate, DHS needs to find new ways to do business, otherwise the system could collapse, and public-private partnerships are a part of the solution.

Challenges remain around scaling successful pilots according to many government CIOs and getting the needed resources is the biggest limitation. Part of the solution is improving collaboration between industry, government, and start-ups to develop some more innovative partnerships.

From left to right: Mr. Justin Bristow (Border Patrol), Mr. Chris Pietrzak (CBP), Mr. Ben Teed (ICE), Mr. Dennis Michelini (CBP)

Different countries have different ideas and philosophies of how data should be stored and exchanged, which presents some unique challenges for DHS. The European Union introduced General Data Protection Regulations over a year ago, and European airlines are still trying to work out what these mean exactly when it comes to sharing data with international partners.

The Office of Biometric Identity Management has done substantial work to match subject matter experts with specific countries to institutionalize biometric information sharing, which is helping DHS improve integration with international partners.

Additional priorities for CBP and ICE in the near-term and other observations:

Combatting the opioid epidemic is a major priority for CBP. Detection capabilities have improved through coordination with forensic lab scientists and training canine units. In addition, the government has had success in taking down illicit dark websites that sell opioids. CBP in partnership with DHS S&T and other government entities launched an opioid detection challenge that had over 80 entries with the winners recently announced. CBP is hoping to test or pilot some of these solutions and have already allocated additional budget to do so.

There is an understanding that "components rule" at DHS, and while that may provide some operational flexibility it can also lead to duplication of effort and confusion when it comes to working externally with other agencies.

In terms of workforce, Border Patrol anticipates a lot of retirements in the coming years and will plan to hire new agents on a regular, steady basis. One of the biggest recruiting challenges is convincing individuals to work in rugged environments where cell phones may not have service, especially as the population becomes more reliant on technology generally. Figuring out how to deliver technology capability in these isolated areas is a major priority for CBP.

The CBP Innovation Team (INVNT), which sits in the Office of the Commissioner, has a mission to advance the adoption of commercial capabilities for users at the edge. They have formed collaborative and financial partnerships with the DHS Silicon Valley Office, the Defense Innovation Unit, and In-Q-Tel and have been able to leverage some of their core competencies. In addition, utilizing section 880 of the National Defense Authorization Act has provided a new contracting mechanism to pursue technology pilots. Despite some of the successes of CBP INVNT, their funding remains uncertain. There are no guarantees they will receive budget each fiscal year to operate, and while appropriators on the Hill seem positive, the ambiguity creates challenges.