Moving from Reactive to Predictive Information and Technology:
A Necessary Paradigm Shift for a More Secure Border

Protecting the United States' land, air, and sea borders is a 24/7, 365 days a year job. Government and commercial stakeholders alike must constantly adapt to the changing threat environment. The Institute for Defense and Government Advancement's Border Management Summit 2015, held on February 23-25 in Washington, DC, convened key leaders from federal, state, and local agencies to discuss the latest challenges related to border management and protection in the United States.

Many of the Summit's presentations and discussions centered on how information and technology can be used to mitigate the challenges of the rapidly evolving environment in which the Department of Homeland Security (DHS) operates. In discussion of issues like biometric identification technologies, "smart borders," and tool and technology integration, a need for a collective paradigm shift from reactive to predictive information and technology emerged. This paradigm shift is a necessary next step to ultimately evolve faster than adversaries and proactively address threats.

Making this move from reactive to predictive information and technology is going to require changes in the way we develop, deploy, and utilize our resources in the protection of our borders. Three key strategies emerged:

- Creating an enabling environment for innovation – supporting unified research and development (R&D) initiatives within government, leveraging innovative technology from the private sector, and creating policies that facilitate information sharing and collaborative ideation

- Using risk-based prioritization – developing strategic and operational analytical capabilities, such as geospatial intelligence, to prioritize strategies and threats and inform the deployment of resources

- Leveraging strategic partnerships – seeking out opportunities for the mutual exchange of resources and ideas both in times of emergency and day-to-day operations

This after-action report highlights the key themes discussed by leaders in border management, including a snapshot of the current challenges the border management community is facing and a look at the paths forward in making the shift from reactive to predictive information and technology.

Development: Creating an Enabling Environment for Innovation

The scope of DHS' mission is very large and continuously evolving. While working to facilitate the lawful cross-border movenemt of individuals, as well as legal international trade, DHS must also maintain a secure border by intercepting individuals, products, and other potential hazards that threaten national security. Organized criminal groups pose an especially significant threat because of their ability to continuously adapt, evolve, and innovate in an attempt to evade our border security efforts. As a result, DHS must also adapt, evolve, and innovate in order to combat their advances.

But, what does it mean to be an organization that is constantly adapting, evolving, and innovating? As Wolf Tombe, Chief Technology Officer of Customs and Border Protection's (CBP) Technology Directorate, noted during the Summit, an innovative organization is willing to: think outside of the box to solve critical problems, take reasonable and calculated risks to solve a problem, fail quickly and inexpensively while attempting to solve a problem, and manage cultural resistance to change. DHS is currently facing a number of challenges that at times can limit its ability to effectively do each of these things and build an environment that enables innovation.

Current State Challenges

One of the most difficult challenges is the current budgetary climate which, as Nelson Balido, CEO of the Border Commerce and Security Council, noted during the Summit, limits the amount of financial and personnel resources that DHS can allocate to research and development initiatives. While limited resources certainly present a challenge, this constrained environment also presents a unique opportunity for DHS to find creative methods to finance their research and development initiatives.

A second key challenge is low employee morale across multiple DHS components. DHS' Federal Employee Viewpoint Survey (FEVS) scores highlight how limited employee engagement inhibits their ability to be innovative. Low employee engagement can reduce overall productivity and prevent employees from developing innovative methods for meeting their mission goals.

Recommendations for Future State

During the Summit, the following recommendations were presented as opportunities for DHS to create an environment that enables innovation:

Shifting the focus of R&D investments

Currently, DHS supports unified research and development (R&D) initiatives that engage multiple components within their Science and Technology (S&T) Directorate. However, while these collaborative efforts improve DHS's ability to take a mission perspective on their R&D investments, these investments are typically limit their focus to new physical materials. Broadening DHS's R&D efforts and shifting the focus from physical materials to innovative analytics approaches can help DHS achieve cost-savings by leveraging data the organization already has to more effectively protect and secure the border.

Paul Hubbard's presentation on Canada's Border Security Portfolio Science and Technology Strategy highlighted the need for a shift in R&D investments toward analytics. He showed how The Canadian Safety and Security Program experienced a greater return on their R&D investments by supporting improved analytics capabilities, rather than on traditional physical sensors. By shifting the balance of their R&D initiatives, Canada was able to make better use of the data they were already collecting and improve their ability to address security threats at the border.

For these types of investments to be successful data-sharing is critical. For example, DHS could leverage data from NOAA, the Department of Defense, and other agencies to increase their understanding of patterns and trends regarding activities taking place at the border.

Leveraging the Private Sector's Developing Technology

Several speakers noted that DHS could focus on identifying innovative ways that commercial products can be adapted for government use. Several speakers noted that working with the private sector could present significant cost-savings opportunities, as many consumer-grade technologies are available for purchase at a low cost.

For example, Wolf Tombe noted that at the 2015 Consumer Electronics Show, he saw different types of wearable technology that could be adapted to increase officer safety at the border. Embedded biometric sensors can transmit information to other officers, EMTS, and dispatch when an agent experiences a sudden increase or decrease in heartrate. Wearable cameras can also provide 360-degree situational awareness of an officer's surrounding environment.

By utilizing these technologies in an innovative way, or by modifying them to more effectively meed the government's needs, DHS can achieve significant cost-savings, while simutaneously increasing border and officer security.

Case Study: Enhancing Border Security from the Local Level

Sheriff Mark Dannels in Cochise County, Arizona created a strategic partnership with CBP's Border Patrol to combat ongoing violence and criminal activity along the US-Mexico border in their county.

As a result of increased criminal activity in their jurisdiction and limited resources to address them, Sheriff Dannels implemented an innovative program that involved deputizing Border Patrol officers. This gave the officers the authority to arrest individuals engaged in criminal activity and bring them to jail under local laws in situations where they would have been unable to make arrests under Federal laws.

This program brought together Federal and local law enforcement officers in an innovative way that increased communication and collaboration among the organizations. As a result, they were able to more effectively combat criminal activity along the border in Cochise County.

Implementing policies that facilitate information-sharing

DHS could enact policy changes that support employees in developing innovative approaches and allow components to implement those approaches within an existing legal framework. These changes could help facilitate information-sharing among DHS component organizations, with other Federal agencies, and with local law enforcement organizations. At the cross-component level, Jon McEntee, Deputy Director of the Borders and Maritime Division, noted that this type of information-sharing already takes place within the DHS Science and Technology Directorate. However, he noted that there are additional opportunities for DHS to build upon and expand these collaboration efforts that will enable employees to develop innovative approaches for solving DHS' most pressing border security challenges.

Additionally, DHS could work with other agencies to modify policies that inhibit their ability to share information about innovative approaches and technologies with one another. For example, Chief Michael Fisher, U.S. Border Patrol, spoke about how there are several opportunities for DHS to leverage lessons-learned from the the Department of Defense in regards to the different types of technologies they use in the field. DHS could identify additional opportunities to share this type of information across different agencies and work to change any policies that limit their ability to do so.

In addition to other Federal agencies, DHS could also identify opportunities to share information with local and international law enforcement organizations. Sharing information and lessons-learned regarding innovative approaches to securing the border will reduce instances of duplication of effort and, as a result, reduce overall costs.

Deployment: Using Risk-Based Prioritization

DHS operates a vital mission to secure the U.S. from the many threats facing the nation. The department aims to better minimize risks and defend against dynamic threats. Within DHS, risk is defined as a function of confidence in situational awareness and understanding of imminent and emergent threats to border security, and the confidence in interagency capabilities to mitigate those threats. Low levels of risk across the border means a more secure border overall.

As risks and threats continue to arise along the border, DHS recognizes the importance of deploying resources to regions most susceptible to threats. Increasingly, DHS is finding that it can optimize its ability to mitigate risk by implementing a risk-based prioritization approach. Risk-based prioritization at DHS involves identifying high risk regions and prioritizing an appropriate response to meet those threats. The Summit focused on the ways that DHS can implement risk-based prioritization and forecasting to disrupt emergent threats before they reach maturity and reduce the difficulty of reactive investigations. For example, Gary Ackerman, Director of the Unconventional Weapons and Technology Division of the National Consortium for the Study of Terrorism and Responses to Terrorism (START), noted that strategic and operational forecasting capabilities could be used to determine the most appropriate deterrents for illegal border crossings.

Current State Challenges

In the past, DHS has responded to risks and threats reactively as they arise, making the department more suceptible to risks and ineffecient use of resources. In recent years, a shift has occurred within DHS agencies to implement new technologies and strategies that focus on risk-based prioritization.

Since March 2013, Border Patrol has taken a risk-based approach to deploying resources; by identifying low-risk areas, where criminal activity is unlikely. By doing this, CBP is able to deploy more resources to regions where additional support will result in increased mission impact.

Recommendations for Future State

The future of risk-based prioritization will require the development of strategic and operational forecasting capabilities. Improving situational awareness can help DHS more effectively forecast threats before they occur. The U.S. Coast Guard's Apex Program was developed to address the need for CBP and partner law enforcement agencies (federal, state, local, tribal, international) to improve situational awareness. The program allowed the Coast Guard to more effectively and efficiently deploy resources to the areas of highest risk, while focusing on the land border between the ports-of-entry on the U.S. southwest border. Integrating a similar approach DHS will enable the Homeland Security Enterprise to achieve increased border incursion detection, interdictions, and deterrence .

The Intelligence Community is responsible for estimating the intent and capability of terrorists and transnational criminal organizations to exploit the border, and the convergence of illicit networks and the impact and risk to CBP operations. The community can use threats, situational awareness, effectiveness, and deployment density as indicators for current and future risks. Geospatial intelligence can also used to describe, assess and visually depict physical features and geographically referenced activities on the earth .

Utilization: Leveraging Strategic Partnerships

We are facing an evolution of threats that is faster and more advanced than we have ever experienced, which means our adversaries are more adept than ever before. Defeating these enemies will require flexibility in our approach. While a single organization can adopt specific policies and procedures to be more adaptive, it is unlikely that they will be able to adequately respond alone. Strategic partnerships between organizations will provide an advantage over our enemies in a number of different ways.

> "To defeat the enemy, we must be nimble."
>
> – Chief Michael Fisher, U.S. Border Patrol

In terms of border management, partnerships most often provide an operational benefit, combining resources (people, equipment, funding) between two groups to accomplish specific tasks. In addition to the operational advantages, partnerships provide a strategic benefit when multiple organizations are involved in the planning and development of programs. For instance, Thomas Homan, Executive Associate Director of Enforcement and Removal Operations within Immigration and Customs Enforcement, noted that this year was the first time that law enforcement had a seat at the table for border management strategic planning efforts – because of this they were able to better document and define their priorities and the deliverable produced is better due to their involvement.

Current State Challenges

Although many organizations have demonstrated the success organizations can have when they work together, there are many challenges inhibiting the creation or efficient operation of strategic partnerships. Many of the speakers at the Summit specifically alluded to organizational/governmental policies that are limiting the types of information they can share with one another, the exchange of goods/equipment, or how they can operate in the field. Others who had established partnerships noted the importance of a separate governance document for how the partnership will execute its work as a partnership versus the execution of work as an independent organization.

Recommendations for Future State

Partnerships enable us to respond faster, it makes us more flexible, and it reduces unnecessary redundancies which equates to monetary and other resource savings. To promote the development and maintenance of these partnerships we must seek out opportunities to share

resources and work together to defeat our enemies. Oftentimes, it takes a moment of crisis to highlight the need for additional partnerships to accomplish the mission. Moving forward, consideration of partnerships should be included in the strategic planning stages, bringing potential partners to the table to consider what will be needed to efficiently and effectively work together.

Each of these benefits can be realized through one or more of the following types of partnerships:

- Component to Component Partnerships: When different areas of an organization come together to accomplish a shared goal or task. For instance, these partnerships between USCG and CBP are promoting additional flexibility and mobility in air assets across organizations, and as a result, common threats are being identified across USCG, OFO, and OBP.

- Interagency Partnerships: Agencies are limited to acting within their specific mission and jurisdiction, however, our enemies know no boundaries, and sometimes work to exploit these agency level differences. Unique in its approach, the Terrorist Screening Center is a multi-agency organization including the watchlist, screening, and information sharing. Each agency is a partner that both provides information, but then also uses the information provided by others to apprehend enemies at our borders.

Case Study: Leveraging partnership to respond to the increase in minors across the SW border

With the surge of unaccompanied minors coming across the border last year, DHS formed a number of different strategic partnerships to facilitate the proper humanitarian care, processing, transportation, and other needs of these vulnerable populations.

Deployments from the US Public Health Services and other governmental organizations were used to provide educational, health, and wellness services. Partnerships also helped facilitate the transportation of individuals for processing across the country.

The US also created strategic agreements with Honduras, Guatemala, and El Salvador to process individuals within 48 hours vs. the traditional 30 day timeframe, which dramatically reduced the number of individuals in each facility over a period of time.

- Private-Public Partnerships: Private organizations are oftentimes able to pivot more rapidly, dispersing resources as they see fit without as many political barriers as stakeholders within government. While private-public partnerships often require more formal agreements that other partnerships, they can be used to promote more innovative responses and to acquire goods and services that may not be realistic for the government to attain in a short amount of time.

- Academic Partnerships: Multiple academic institutions are partnering with the government for research and development. These partnerships allow an agency to quickly seek out and conduct work with the leading subject matter experts in a particular field for the necessary amount of time. For instance, Stephens Institute of Technology is working on research funded by DHS Science & Technology as well as seed grant funding which it is using to developing tracking technology for use within marine environments. These academic institutions provide a platform for creative and sometimes non-traditional solutions to issues.

In the future it will be important for organizations to bring solutions to address political and operational barriers to the forefront so that they can be addressed. We also must consider how our organizations can reduce unnecessary redundancies and use partnerships in both times of emergency and day-to-day operations.

Conclusion and Next Steps

With the inception of DHS, a vast physical network of operations centers and systems was successfully and artfully deployed across the nation. This network provides the necessary structure to maintain a certain level of security at the borders and react to threats when they strike.

Now, a long-term proactive approach is needed to adapt to increasingly sophisticated threats and challenges – from cyber risks to transnational criminal groups to infectious epidemics. This means being smarter and more strategic about how threats are identified, policies and procedures are implemented, and technologies are deployed. As noted by the Summit's theme "360° Protection of Our Borders Through Effective Inter-Agency Communication," implementation of these forward-thinking strategies identified will require collaboration and communication across agencies and sectors.