ISDS 2016 Conference Abstracts

NBIC and DTRA, An Interagency Partnership to Integrate Analyst Capabilities

Wai-Ling Mui*[4, 1], Edward P. Argenta[2, 3], Teresa Quitugua[4, 1] and Christopher Kiley[2, 3]

[1]National Biosurveillance Integration Center, Washington, DC, USA; [2]Department of Defense, Ft. Belvoir, VA, USA; [3]Defense Threat Reduction Agency, Ft. Belvoir, VA, USA; [4]Department of Homeland Security, Washington, DC, USA

Objective

The National Biosurveillance Integration Center (NBIC) and the Defense Threat Reduction Agency's Chemical and Biological Technologies Department (DTRA J9 CB) have partnered to co-develop the Biosurveillance Ecosystem (BSVE), an emerging capability that aims to provide a virtual, customizable analyst workbench that integrates health and non-health data. This partnership promotes engagement between diverse health surveillance entities to increase awareness and improve decision-making capabilities.

Introduction

NBIC collects, analyzes, and shares key biosurveillance information to support the nation's response to biological events of concern. Integration of this information enables early warning and shared situational awareness to inform critical decision making, and direct response and recovery efforts.

DTRA J9 CB leads DoD S&T to anticipate, defend, and safeguard against chemical and biological threats for the warfighter and the nation.

These agencies have partnered to meet the evolving needs of the biosurveillance community and address gaps in technology and data sharing capabilities. High-profile events such as the 2009 H1N1 pandemic, the West African Ebola outbreak, and the recent emergence of Zika virus disease have underscored the need for integration of disparate biosurveillance systems to provide a more functional infrastructure. This allows analysts and others in the community to collect, analyze, and share relevant data across organizations securely and efficiently. Leveraging existing biosurveillance efforts provides the federal public health community, and its partners, with a comprehensive interagency platform that enables engagement and data sharing.

Methods

NBIC and DTRA are leveraging existing biosurveillance projects to share data feeds, work processes, resources, and lessons learned. A multi-stakeholder Agile process was implemented to represent the interests of NBIC, DTRA, and their respective partners. System requirements generated by both agencies were combined to form a single backlog of prioritized needs. Functional requirements from NBIC support the development of the prototype by refining system capabilities and providing an operational perspective. DTRA's technical expertise and research and development (R&D) portfolio ensures robust analytic applications are embedded within a secure, scalable system architecture.

Integration of analyst validated data from the NBIC Biofeeds system serves as a gold-standard to improve analytic development in machine learning and natural language processing. Additionally, working groups are formed using NBIC and DTRA extended partnerships with academia and private industry to expand R&D possibilities. These expansions include leveraging existing ontology efforts for improved system functionality and integrating social media algorithms for improved topic analysis output.

Results

The combined efforts of these two agencies to develop the BSVE and improve overall biosurveillance processes across the federal government has enhanced understanding of the needs of the community in a variety of mission spaces. To date, co-creation of products, joint analysis, and sharing of data feeds has become a major priority for both partners to advance biosurveillance outcomes. Within the larger efforts of system development, possible coordination with other agencies such as the Department of Veterans Affairs (VA) and the US Geological Survey (USGS) could expand reach of the system to ensure fulfillment of health surveillance requirements as a whole.

Conclusions

The NBIC and DTRA partnership has demonstrated value in improving biosurveillance capabilities for each agency and their partners. BSVE will provide NBIC analysts with a collaborative tool that can leverage use of applications that visualize near real-time global epidemic and outbreak data from a range of unique and trusted sources. The continued collaboration means ongoing access to new data streams and analytic processes for all analysts, as well as advanced machine learning algorithms that increase capabilities for joint analysis, rapid product creation, and continuous interagency communication.

*Wai-Ling Mui
E-mail: wai-ling.mui@associates.hq.dhs.gov