AIRPORT RISK ASSESSMENT MODEL

Intel-Driven, Risk-Informed Resource Optimization for Airport Security

Challenge

As stated in the Department of Homeland Security's (DHS) 2014 Quadrennial Homeland Security Review (QHSR), "Preventing terrorist attacks on the Nation is and should remain the cornerstone of homeland security." The QHSR places DHS at the forefront of taking "a smart, effective, and efficient risk-based approach to border security and interior enforcement and continually evaluate the best use of resources."

This immense responsibility is critical to our nation's international airports, which are subject to ever-present security threats from our adversaries. These threats are dynamic, changing continuously with the arrival and departure of passengers and cargo across the airport. Hundreds of airport security resources work together in innumerous combinations to meet these threats and to create uncertainty in the minds of potential adversaries - but which way is best?

Next Shift

What if there were a way to automatically quantify risk and determine where and when to place these scarce security assets to minimize airport risk?

All Shifts

Monday, August 28 2017

09:00 - 12:00 Area: Arrival Curbside

lisk buydown: 18%

12:00 - 03:00 Area: Departure Curbside Risk buydown: 14%

<u> 13.00 - 05.00</u>





Solution

ARAM

 \mathcal{L}

The DHS Science & Technology Directorate (S&T) and Pacific Northwest National Laboratory (PNNL) have designed the next generation in risk assessment and resource allocation modeling: The Airport Risk Assessment Model (ARAM). Founded on core DHS risk doctrine, ARAM is a risk-based, intel-driven decision platform to assess and quantify terrorism risk at airports. ARAM then optimally and dynamically recommends allocation of deployable law enforcement and security countermeasures through rigorous mathematical techniques. At the same time, ARAM increases the uncertainty to would-be adversaries. In close partnership with the Transportation Security Administration (TSA), DHS S&T, and PNNL are working to launch the first operational version of ARAM at the Seattle-Tacoma International Airport.

> AUTOMATICALLY **QUANTIFY THE RISK** AND ALLOCATE RESOURCES



ARAM Airport Risk Assessment Model

Impact

Compared to the current method of resource allocation methods which is largely reactionary, ARAM offers:

- > An objective, robust, defensible, and scalable approach for deploying security assets at an airport
- A means to quantify overall risk and relative risk buy-down by individual security countermeasures and different asset types
- A planning and forecasting tool to ascertain future resource needs, especially for activities that significantly increase airport volume (passengers arriving for cruise ships, major holidays, etc.)
- > A mechanism to coordinate security activities across different airport security agencies
- > A tool to evaluate new security and screening countermeasures in order to gauge their overall potential value in reducing total airport risk

Next Steps

DHS S&T, PNNL, and TSA will deploy ARAM at Seattle-Tacoma International Airport and continue to collaborate on the long-term development and sustainability of ARAM along with the potential application at additional airports nationwide.





CONTACT

John M. Fortune, Ph.D. Apex Screening at Speed Program Manager Explosives Division Science and Technology Directorate U.S. Department of Homeland Security (202) 254-6622 John.fortune@hq.dhs.gov

Robert Brigantic, Ph.D.

Chief Operations Research Scientist and Principal Investigator Pacific Northwest National Laboratory (509) 375-3675 Robert.brigantic@pnnl.gov