

# Partnering for Homeland Security S&T

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Pacific Northwest National Laboratory (PNNL) supports the U.S. Department of Homeland Security (DHS) in advancing technology, developing innovative operational solutions, and creating cutting-edge capabilities that keep Americans safe, secure, and resilient.

As a long-standing and highly integrated partner to DHS, PNNL continuously provides critical capabilities, leadership, and support for DHS operations to meet mission needs in detection, deterrence, resiliency, and workforce management at our nation's borders, in cyberspace, and throughout domestic infrastructures.

## CHEM/BIO SECURITY

- Integrating cutting-edge capabilities in measurement, imaging, and data analytics to enable threat-agnostic approaches to detection and characterization
- Addressing complex challenges spanning signature identification and exploitation, environmental fate and transport, microbial communities, health physics, toxicology, and more
- Supporting the development of architectures for evaluating risk from chemical, biological, and agricultural/food threats
- Evaluating detectability and toxicity of known and predicted illicit drug threats
- Advancing the state-of-the-art in trace detection through technology like the award-winning VaporID chemical vapor detection system, which provides real-time, noncontact sampling and analysis at ambient temperatures to ppq levels

## FIRST RESPONDERS AND DISASTER RESPONSE

- Providing solutions to increase effectiveness and expand capacity of first responders and emergency managers
- Through our Northwest Regional Technology Center, leading collaborative efforts to identify technology needs and requirements, enable testing and evaluation, and provide unbiased information to accelerate technology development and deployment

## AVIATION SECURITY AND SOFT TARGETS

- Bringing science, technology, and innovation to protect soft targets—populated, unprotected places that present an opportunistic threat environment
- Internationally recognized expertise in millimeter wave, explosives detection, risk modeling, and immersive imaging and analytics is helping enhance transportation screening and security, whether in the overall architecture or through cutting-edge tools that advance detection science
- Delivering next-generation security solutions at large-scale venues nationwide
- Making TSA goals for open architecture a reality through a virtual testbed for Open Platform Software Library technologies

## CYBERSECURITY

- Bringing innovative approaches to federal government and industry to protect the nation's cybersecurity landscape
- Assessing and analyzing threats and vulnerabilities to critical infrastructure, enhancing resilience through advance planning, and strengthening the security and reliability of infrastructure and cyberspace
- Providing cyber solutions ranging from doctrine development to new analytic tools to vulnerability assessments and enabling practitioners to review and understand broad data patterns and trends, generating new insights and swifter identification of potential issues

## BORDERS AND MARITIME SECURITY

- More than 20 years' experience with radiation portal monitors and other imaging systems installed at ports of entry
- Helping safeguard America's borders from dangerous people and materials from the sea to the surface, while enabling legitimate trade and travel
- Home to the Department of Energy's only marine research facility, conducting research and developing technologies toward sustainable energy, maritime security, and a resilient environment
- Utilizing autonomous research vessels and underwater sensors to explore the maritime environment, detect changes, identify threats, and enable a resilient future

## FACILITIES FOR NEXT-GENERATION THREATS

- Interdiction Technology and Integration Laboratory – houses radiation portal monitors and systems that make up a deployed radiological interdiction system
- Northwest Regional Technology Center – a virtual resource connecting researchers and capabilities with private and public stakeholders to address current and emerging challenges
- Center for AI @ PNNL – coordinating the pioneering research focused on artificial intelligence for science, security, and energy resilience
- Biological Safety Level 3 Facility at the University of Washington – providing insight into biothreat agents and human health pathogens
- Maritime and Coastal Research Laboratory – home to autonomous systems and sensors advancing detection for maritime threats
- 5G Innovation Studio – focused on 5G-related technologies for scientific applications driving cyber-resilient critical infrastructure and advanced wireless communications

