

CHALLENGE: EMERGING THREATS

Rapid technological changes occurring today present new challenges to the Department of Homeland Security's (DHS) ability to keep up with the ever-changing threat environment. The DHS Science and Technology Directorate's (S&T) Emerging Risks and Technologies (ERT) Program is helping to meet these challenges through a vigilant, analytical approach to staying ahead of emerging risks, including adversarial use of emerging technology.

DEFENDING AGAINST CURRENT AND FUTURE THREATS

The ERT Program seeks to execute research to establish a comprehensive, repeatable process for identifying emerging risks (including emerging technologies), prioritizing which risks have the highest probability of impact to the nation, and subsequently informing relevant strategies, policies, or investments. It will refine and deliver a process to identify emerging risks.

DHS lacks a broad-based foresight process to identify near-term, mid-term and long-term risks and opportunities and to translate those challenges into proactive policy and investment decisions. Without foresight to anticipate and analyze emerging risks and technologies, DHS will remain in reactive response mode to these threats and challenges to the Homeland Security Enterprise and thus unable to proactively manage them. Insufficient assessment of risk would lead to decreased decision-making effectiveness and efficiency.

PROGRAM IMPACT

The ERT Program aims to develop a framework to analyze threats to DHS missions and operations stemming from emerging risks and technologies. S&T will leverage internal subject matter assessments and engage with interagency, academic, industry and foreign partners to conduct assessments, studies, and analyses to identify and prioritize emerging risks and technologies relative to future missions.

S&T is in a unique position to shape the development of approaches to counter emerging risks and technologies. By anticipating the evolving spectrum of concerns, this program will allow DHS to analyze critical emerging risks and technologies while characterizing their associated risks before any adverse impact to security. Products from this research

and development (R&D) activity will be used by DHS Policy and Components to:

1. Act as a catalyst for conducting emerging risk assessments.
2. Drive prioritization of risk and response across critical missions of the Department.
3. Function as one of the key demand signals for the development of focused R&D programs.
4. Enable leaders to correlate the homeland security posture to emerging risks and opportunities in order to inform and protect the homeland security enterprise.

EMERGING TECHNOLOGY TOPICS

S&T's focus for the ERT program's first activity will be on the following set of emerging technologies (priorities may evolve depending on the threat):

1. Intelligent swarms
2. Synthetic pandemics
3. Additive manufacturing
4. Internet of Things
5. Genetic security
6. Artificial intelligence as a threat vector
7. Quantum computing
8. AI-enabled content
9. Wireless networks (5G/6G)
10. Space as a domain



PERFORMER

- Homeland Security Operational Analysis Center, a Federally Funded Research and Development Center managed by the RAND Corporation, Santa Monica, CA.