

DHS Science and Technology Directorate

S&T Engines – “Powering Open Innovation”

Technology Engine Overview

The dynamic threats to our nation and the accelerated pace of technology require an updated way of thinking about how the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) approaches research and development (R&D) solutions. S&T Technology Engines (Engines) are a key strategy in achieving the S&T Visionary Goals that address these challenges by powering open innovation. The Engines enable Apex and other S&T programs to capitalize on expertise and technology from across the DHS enterprise by expanding opportunities for involvement and application of subject matter experts (SME). They represent an agile approach to identify, develop, and repurpose R&D solutions. The Engines leverage technological, scientific, industrial, and academic communities to provide continuous support to the dynamic needs of DHS component agencies. The Engines identify and share subject matter expertise, technical solutions and tools, best practices, lessons learned, and reusable products and solutions. Teaming and collaboration to leverage knowledge from the DHS enterprise and external stakeholders are core components of the Engine approach.

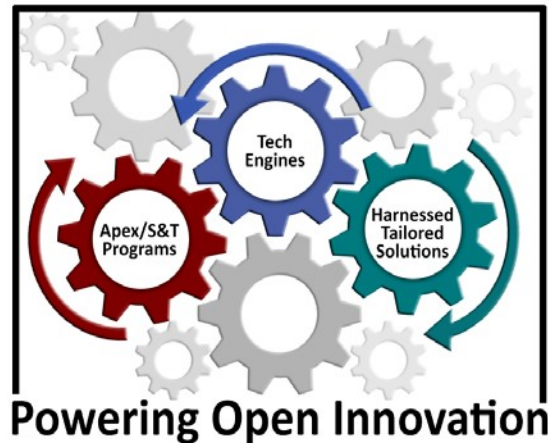
Technology Engine Goals

Services, solutions, access to SMEs, and knowledge products will be applied and repurposed across multiple projects, realizing cost savings. This has led to the Engines’ collective experience and awareness of emerging technology trends, resulting in robust knowledge bases and networking which continually serve the dynamic needs of S&T and the DHS enterprise. Engines objectives include:

- Increased return on investments by benefiting multiple Apex programs and component needs
- Reduce redundancy of multiple Apex-only solutions
- Accelerate impact of Apex and other S&T programs
- Increase agility by adjusting to changing Apex needs

How will the Engines produce measurable results and realize a return on investment?

The Engines enable application of existing and emerging solutions across multiple Apex programs, other S&T programs, and operational components, reducing redundancy and increasing agility. This approach fosters



collaboration and opportunities for innovation and accelerates the impact and application of S&T’s R&D within the DHS components.

What does “Powering Open Innovation” mean?

“Powering Open Innovation” refers to identifying and applying knowledge, practices, and solutions by leveraging the broadest possible network of SMEs within and beyond S&T and DHS to address strategic and operational challenges. This approach allows S&T to improve agility and “speed to market” as new technologies and solutions are identified, developed, and deployed to better prevent, respond to, and recover from all hazards and homeland security threats.

What are the Engines’ basic capabilities?

To leverage expertise and technologies from across the DHS enterprise, the Engines:

- Identify cross-program requirements and how specific solutions might be repurposed and applied to numerous projects
- Provide ongoing advice and support to Apex and other S&T programs, and components in order to leverage existing and emerging technologies, methods and tools
- Forecast demand for specific technological needs and services



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To learn more about Technology Engines,
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What specific services do the Engines offer?

Engines provide:

- Access to and involvement of the DHS enterprise as well as industry and academic SMEs, including opportunities for collaboration, coordination, and networking
- Identification and application of state-of-the-art technology, methods, and tools
- Application of lessons learned and best practices
- Contractual means for more timely response to R&D service requests

How will the Engines use a “teaming” approach to achieve their outcomes?

Teaming is fundamental to Engine success. The Engines will draw on intellectual capital and other resources from across various S&T organizations and components to apply to Apex programs, other S&T programs, and operational Components programs. These resources are vital to understanding existing and emerging threats facing the homeland and identifying approaches to address them. The Engine teaming approach has emerged from S&T’s belief that partnership and collaboration are a key strategy for identification and application of research and technology.

Technology Engine Offerings

The dynamic nature of challenges facing DHS and S&T, combined with the fast pace of technology requires specific Engines be established, matured, and retired based on Apex programs, other S&T programs and DHS component needs. Current Engines are:

Behavioral, Economic, and Social Science Engine (BESS-E)

Provides analysis of the social and behavioral implications of new technologies, programs, and policies to support research, implementation, and diffusion. An example capability is providing an organizational assessment to determine how a new technology should be presented and transitioned to a client.

Biometric Technology Engine (BT-E)

Provides a dedicated, sustainable biometric capability at S&T by driving objective analysis of biometric technologies, executing robust testing and evaluation to inform applications of biometric technology to specific

operational use cases, and identifying common biometric capability gaps across DHS components and HSE stakeholders. An example capability is the Maryland Test Facility (MdTF), which provides a fully instrumented space in which to test operational biometric configurations under simulated conditions.

Communications and Networking Engine (CN-E)

Provides integrated communications and networking solutions that ensure operability and interoperability across all network platforms to ensure the efficient and effective exchange of voice, video, and data information. An example capability is informing solutions that provides wireless broadband services in remote locations lacking public safety wireless coverage.

Data Analytics Engine (DA-E)

Provides expertise in advanced computation, storage, data analytics, and algorithm development and evaluation techniques to enable user-focused, data-driven solutions for DHS missions. An example capability is prototyping and applying big data architecture and analytic tools to increase export enforcement effectiveness.

Identity and Access Management Engine (IDAM-E)

Provides the expertise, architectures, and technologies that enable secure sign-in, identity verification, and authorization via trusted infrastructures to ensure the right people have access to the right information at the right time.

Modeling and Simulation Engine (MS-E)

Provides subject matter expertise and coordination support for modeling and simulation (M&S) capabilities. An example capability is providing situational awareness of trends and advances by industry, academia, and government in the M&S field. MS-E maintains close collaboration with the Department of Defense Modeling and Simulation Coordination Office (DMSCO) and other inter-agency M&S domain partners.

Situational Awareness and Decision Support Engine (SANDS-E)

Provides Apex and other S&T projects with assured, secure access to databases, knowledge bases, modeling and simulation tools, and shared situational awareness products. An example capability is providing visualizations that can ingest essential information for 2-D and/or 3-D display.

