



Dams Sector Analysis Tool

Overview

The U.S. Department of Homeland Security (DHS) National Protection and Programs Directorate, Office of Infrastructure Protection, and the U.S. Army Corps of Engineers (USACE), Headquarters, Office of Homeland Security, have actively collaborated in the development and implementation of the Dams Sector Analysis Tool (DSAT). DSAT serves as an effective web-based platform that consolidates analysis tools and data collection mechanisms supporting the screening, prioritization, and characterization of critical assets. It provides Dams Sector partners with secure access to a series of modules and applications covering a wide range of analytical capabilities.



Figure 1. DSAT Home Page

DSAT Modules

Consequence-Based Top Screen – This module supports the identification of critical facilities, i.e. those facilities whose failure or disruption could potentially be associated with the highest possible impacts across the entire sector or within specific portfolios. This criticality screening is based on the potential consequences associated to a worst reasonable case scenario, and characterized through 14 consequence parameters. By using a consequence-based approach, this module serves as an effective all-hazards criticality screening tool.

Portfolio Prioritization Tool – This module supports the prioritization of critical facilities identified through the criticality screening process. The prioritization approach is scalable and may be used for various portfolio levels (i.e. national, regional, and State) by adopting different severity thresholds and relative weights for individual consequence categories. This prioritization tool computes a numerical score, referred to as the Potential Consequence Index, which ranges between 0 and 100 and represents the combined potential for severe impacts. This module serves as a useful all-hazards portfolio prioritization tool that can support decisions regarding the need for additional analyses and detailed studies.

Comprehensive Facility Report – This module supports the consolidation of facility-specific information that can be used to inform and support regional impact assessments resulting from natural hazards and/or manmade incidents. This module facilitates rapid reporting of critical project features, components, and missions, as well as

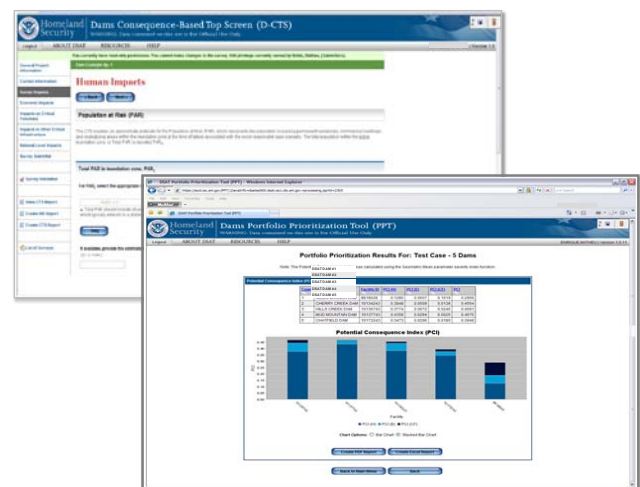


Figure 2. Consequence-Based Top Screen and Portfolio Prioritization Tool

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location and regional setting. It also supports the identification of other local critical assets and associated interdependencies, and the potential for significant impacts associated with severe project disruption. In addition, the module can be used to consolidate system-wide information related to the watershed, including identification of other dams along the same river basin.

Common Risk Model for Dams – Assists in quantifying vulnerabilities based on standard security configuration attributes and pre-selected attack modes. The module serves as the computational implementation of the Common Risk Model for Dams methodology, which accounts for sector-specific characteristics of typical security configurations found in dams. This module serves as an objective self-assessment tool that supports the consistent identification of scenario-based vulnerabilities and facilitates the comparison of associated conditional risk estimates. The analysis is based on the definition of defensive layers, used to systematically characterize the security posture of critical components within the facility.

The corresponding vulnerability assessment is conducted based on pre-selected attack vectors, which effectively streamlines the security assessment process and the determination of conditional risk values.

ATPlanner-Dams Data Input Tool – This module is a pre-processor for blast damage assessment analysis for selected components of a project. It captures and consolidates the necessary input data for scenario-based analyses utilizing the Anti-Terrorist Planner for Dams (ATPlanner-Dams) tool, developed and maintained by the U.S. Army Corps of Engineers. In addition to geometric characteristics, material properties, and reservoir level, this module also collects other relevant information such as selected attack vectors and the corresponding standoff distances.

Significant Incident Reporting Tool – This module provides an effective platform for consolidation of information associated with significant incidents in an effort to establish a database of historical failure and non-failure incidents to improve sector-wide situational awareness.

DSAT Viewer – This is a web-based viewer with user-specific access that provides geospatial mapping, visualization capabilities, and a host of other analytic products. The tool links to, and integrates with, available real-time information (e.g., earthquake data, stream flows, weather conditions, etc.). Additional analysis features include the ability to perform spatial queries of populations and critical infrastructure assets within a defined area. In addition, the DSAT Viewer provides access to pre-processing capabilities to support simplified dam break flood inundation analysis through the Decision Support System for Water Infrastructural Safety (DSS-WISE), developed by the National Center for Computational Hydroscience and Engineering at the University of Mississippi.



Figure 3. Common Risk Model for Dams

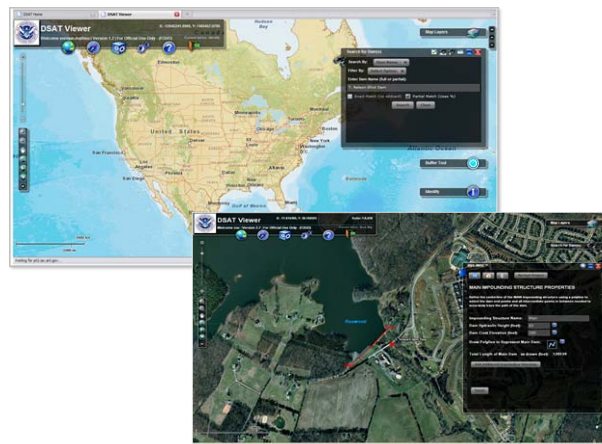


Figure 4. DSAT Viewer and DSS-WISE Pre-processor

For Additional Information

For additional information on DSAT capabilities, please contact DHS at DAMS@hq.dhs.gov or USACE at CIPR@usace.army.mil.

User Access Request

To request access to DSAT, please contact the DSAT Administrator at DSAT@hq.dhs.gov.