URBAN
AWARE

Source Term Estimation (STE)

Advanced decision support tool, empowering users with comprehensive, real-time situational awareness of CBRN/HazMat incidents.

OVERVIEW

Source Term Estimation (STE) is a real-time decision tool that supports the CBRN/HazMat emergency response community. It empowers decision-making and informed response strategies through the provision of CBRN source parameter estimation and downwind hazard effects forecasting.

STE can be integrated with deployed sensors, automatically triggering when they alarm to estimate the source of a CBRN/HazMat release, as well as the extent of the wider threat. It can also be used for planning, running in an analytical mode to estimate outcomes from hypothetical scenarios.

DETAILS

At the core of STE is a CBRN sensor information fusion tool that utilises advanced Bayesian algorithms to process data from multiple CBRN sensors. Generating accurate insights in real-time, the results provide significantly enhanced situational awareness to decision makers.

The Bayesian algorithms fuse the sensor data with other available information feeds, such as meteorology, geographic data and intelligence data. This produces greater actionable intelligence available through one platform, including probabilistic estimates of the likely location of the release, the amount and type of released material and the predicted downwind hazard.

By fusing data from multiple sensors and considering them in combination, the tool also reduces the frequency of false alarms, saving on resources and time.

STE includes a rich graphical user interface dashboard which provides decision makers with a clear understanding of the situation. Using a simplified display, the tool presents the uncertainties inherent in the modelling as well as an assessment of how best to minimise risk to both people and asset.

USE CASES

STE is an advanced CBRN sensor data fusion capability, developed by Riskaware for the Defence Science and Technology Laboratory (Dstl). It is now available from Riskaware for use by other Government and Commercial organisations for the following applications:

- CBRN sensor data management and information fusion to assess key hazard data (e.g. its current location and its release parameters)

- Sensor alert monitoring and visualisation

- Informed scene assessment through dynamic sensor management (e.g. scene assessment drones)

- Robust forecasting of likely hazard areas and downwind effects

FEATURES

- Advanced suite of Bayesian CBRN sensor information fusion algorithms

- Real-time, always-on information fusion data and false alarm reduction

- Accurate source term estimation and prediction of the likely hazard area

- Dynamic graphical user interface to provide clear situational awareness to users

- Plug and play system to facilitate algorithmic component interchange

- Integration friendly communication via industry standard messaging protocols

- Scalable deployment, from a single computer to high-powered distributed clusters, either on-premise or cloud-hosted

BENEFITS

- Provides users with a complete picture of the hazard zone

- Supports comprehensive understanding of the threat being tackled and the associated uncertainty

- Harnesses sensor data across multiple locations to provide integrated and reliable intelligence

- Situational awareness empowers users to fully analyse the predicted threat areas and tailor emergency responses

- Hypothesises potential CBRN source releases, calculating their likelihood based on sensor readings and meteorology

- Reduces false alarms through robust statistical treatment of multiple sensor readings

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