

Warfighter Integration to Enhance Operational Utility of Emerging Technologies

Layered Sensing/Decision Support Demonstration

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The Layered Sensing/Decision Support Demonstration (LS/DSD) seeks to demonstrate improvements to situational understanding and to support faster decisions that mitigate chemical and biological threat scenarios by consuming sensor and contextual data from multiple surveillance systems, dedicated chemical and biological sensing components including both stationary and mobile sensor elements, and processing these data using advanced sensor data analytics and decision logic algorithms. These sensing modalities and analytical engines function in an interoperable computational environment that enables the near-instantaneous data transfer of detection events via publish and subscribe protocols and the cross-cueing and tasking interface enabled by the Integrated Sensor Architecture (ISA), the implementation of the U.S. Army's Sensor Computational Environment or SensorCE. All relevant contextual data such as meteorological information, intelligence about threat capabilities, surveillance and reconnaissance (ISR), force protection system sensor data, and chemical and biological detection systems converge and are cross-correlated by advanced algorithms that invoke decision theory and spatial and temporal covariance to provide earlier and higher confidence warning of threat conditions. The biosurveillance ecosystem and biosurveillance portal databases and associated toolsets are autonomously accessed and populated by the decision engine to generate the improved situational understanding (SU). Operators from the PACOM Area of Responsibility were included in the demonstration and assigned tasks that enabled feedback on the utility and applicability of the system for improving early warning decision making.

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