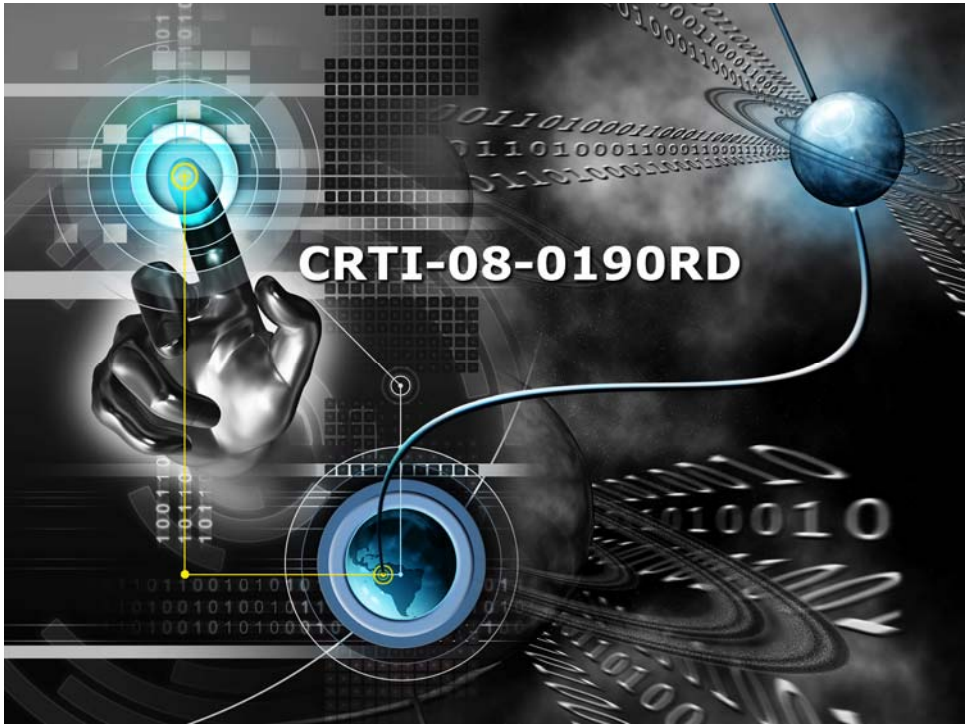

DATA FUSION

COMPLETED

DELIVERED BY: National Research Council - Institute for Information Technology (NCR-IIT)

PARTNERSHIP: AMITA Corporation, University of Ottawa Heart Institute, DRDC Valcartier, Health Canada, Public Health Agency of Canada (PHAC), Ottawa Public Health (OPH), Carnegie Mellon University (CMU) School of Computer Science, Auton Laboratory, Ontario Agency for Health Protection and Promotion, Queen's University Public Health Informatics (QPHI), Michigan Department of Community Health (MDCH), Grey Bruce Health Unit (GBHU), The Ottawa Hospital (TOH), Department of Infections Diseases and Infection Control, Carleton University - Human Oriented Technology (HOT) Laboratory

START-END: 2009 -2011

FUNDS: $2,072,310

OBJECTIVES:
The project will see the development of software and adaptive process frameworks that will give responders and decision-makers easy access to state-of-the-art data fusion (DF) technology, and make it possible for them to design and deploy domain-specific DF-surveillance solutions.

It will see the adaptation of DRDC DF Framework to CBRNE situation monitoring applications, the building of application scenarios and prototypes, the design of a proof-of-concept software framework to implement DF-Surveillance applications and the development of a prototype CBRNE situation analysis and monitoring station using state-of-the-art DF and user interface technology.

TECHNOLOGIES:
The project team has in-depth expertise in varying areas of technology such as syndromic surveillance (AMITA, Ottawa Heart Institute, GBHU), text-mining and information extraction (NRC-IIT), data fusion and pattern recognition (DRDC-Valcartier), outbreak detection algorithms (Carnegie Mellon, Michigan Department of Community Health (MDCH), human computer interaction and visualization (NRC-IIT).

OUTPUTS:
This project will develop a statistical threat monitoring capability for multiple domains of risk and a technology DF framework that will overcome the vertical isolation of surveillance knowledge and analysis tools, support decision-making processes and move threat surveillance and SA to the next stage.

The project will build two prototypes (detecting hospital outbreaks and monitoring illicit substance abuse) relevant to the detection of bio-terrorism and that address specific gaps not covered by existing systems. The project will also deliver a formalized process that will allow risk domain experts to develop and deploy DF-surveillance solutions effectively. This directly addresses priorities RA2 (risk cataloguing, modeling and visualization) and RA3 (threat proliferation monitoring). By providing new sources of credible information relevant to CBRNE risk, this project will also promote public confidence and trust.

IMPACT:
This project will provide evidence of a flexible and accurate surveillance technology addressing critical problems facing end-users of current systems: insufficient data, inability to integrate to multiple data streams, and difficulty managing false positive signals.

This project will leave behind a concept, validated in a relevant environment, for a capability to provide responders with DF-surveillance systems that will allow them to more accurately monitor high risk situations. In the event of a positive signal, responders will have the information they need to discriminate true from false positive alerts, to respond immediately and accurately to the former, and to reject the latter quickly and efficiently, conserving resources.