



Defence Research and
Development Canada

Recherche et développement
pour la défense Canada

Centre for Security Science
222 Nepean Street, 11th floor
Ottawa, Ontario
K1A 0K2

Centre des sciences pour la sécurité
222, rue Nepean, 11^{ème} étage
Ottawa, Ontario
K1A 0K2

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Prepared by:

Philip Dawe

DRDC Centre for Security Science

Approved by:

Dr. Andrew Vallerand

DRDC Centre for Security Science

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LETTER REPORT: Analysis of Canada–U.S. Resiliency II Experiment

INTRODUCTION

1. The Canada–U.S. Resiliency II Experiment (CAUSE II) focused on Enhancing Trans-Border Resilience in Emergency and Crisis Management through Situational Awareness interoperability. It was jointly sponsored by the U.S. Department of Homeland Security Science and Technology Directorate First Responders Group, the Defence Research and Development Canada Centre for Security Science (CSS), and Public Safety Canada. This experiment was in support of the Beyond the Border (BTB) Action Plan¹, which set out joint priorities and specific initiatives for cross-border collaboration. The experiment successfully integrated and harmonized CA/US situational awareness systems and provided evidence that this S&T-based capability facilitates the development of shared situational awareness among the partnering EM organizations and enhances the planning, coordination and delivery of cross-border responses. This Letter Report briefly presents the methodology, key experiment results and recommendations to further advance BTB outcomes. Further details on CAUSE II are provided from the experiment video² and CA/US joint report³

METHODOLOGY

2. A scenario-based approach March 5 and 6, 2013 was used to simulate two cross-border emergencies that required a coordinated response from partnering EM organizations. The first scenario involved an oil refinery explosion in Saint John, New Brunswick, affecting the supply chain in that region and across the border into Maine. The second scenario involved a motor vehicle accident between a specialized road tanker truck and a trailer, resulting in an explosion of compressed natural gas that occurred at the border between Canada and the United States in Calais, Maine. Both scenarios required a cross-border response from Canadian and U.S. agencies.

3. The experiment consisted of a series of simulations enabled through the use of integrated situational awareness (SA) toolsets and followed a System-of-Systems approach whereby existing systems were connected based on open standards. Key Canadian systems included the Multi-Agency Situational Awareness Systems (MASAS) enabling multi-jurisdictional exchange of incident-specific content/alerts and the Operations Centre Interconnectivity Portal sharing incident information among federal emergency operations centres. Key U.S. systems included Virtual USA/Virtual Maine enabling cross-jurisdictional information sharing/discovery and the Integrated Public Alert and Warning System (IPAWS) enabling authorized officials to deliver alert messages to the public.

¹ Beyond the Border Action Plan http://www.actionplan.gc.ca/grfx/psec-scep/pdfs/bap_report-paf_rapport-eng-dec2011.pdf

² CAUSE II video

<http://www.firstresponder.gov/Pages/FRMediaGalleryDisplay.aspx?eventid=13&gallery=video>

³ CA/US Joint Report

http://cradpdf.drdc-rddc.gc.ca/PDFS/unc124/p537613_A1b.pdf

<http://www.firstresponder.gov/Pages/FRMediaGalleryDisplay.aspx?eventid=13&gallery=video>

4. This report is based on a set of instruments (Demographic, Participant and NASA Task Load Index) administered to the participants and observers (N=22) during the experiment which gathered descriptive data from participants, assessed the participants experiences regarding the impact of integrated software tools on information exchange and measurement of participants workload level.

RESULTS

5. The data gathered from players and observers were analyzed using descriptive statistics. The findings are as follows: 1) integrated situational awareness (SA) tools enabled the sharing of information to a wider, cross-border EM community; 2) integrated SA tools enhanced the participants' initial understanding of the emergency event and continued to enhance their understanding as the emergency event unfolded; 3) Integrated SA may support the enhanced quality of decision making and risk management processes, but will not necessarily reduce the time required to complete these activities; 4) integrated SA tools had a positive impact on information exchange with respect to the precision and timeliness of the responses; 5) A System of Systems approach with information exchanges based on Open Standards are key to enabling the integration of SA systems and for facilitating the sharing of CA/US emergency information.

CONCLUSIONS.

6. It is concluded the *value added* by CAUSE II is that it advanced the BTB outcome of “*Rapidly Respond to and Recover from Disasters and Emergencies on Either Side of the Border*” by providing an approach for CA/US SA tools integration and experiment metrics proving that shared situational awareness systems enhanced the planning, coordination and delivery of cross-border responses. Key to further enabling cross border systems are continued investments in international open standards, convergence of international data sharing agreements and transition of SA information exchange technologies to full operational status. Although CAUSE II successfully integrated MASAS, IPAWS, Virtual USA and a number of systems at the provincial, state and local levels additional work is required to further test, evaluate and validate the SA and the alert and warning solutions.

RECOMMENDATIONS.

7. It is recommended that follow-on experiments be conducted to further refine cross-border voice and data interoperability capabilities until the conclusion of the Communications Interoperability Working Group (CIWG) Action Plan in 2017. This work will require appropriate outreach,⁴ communications⁵ and coordination with relevant BTB constituents, the CIWG and future CAUSE participants. It will also require focused attention and definition of scope based on

⁴ CAUSE II Article <http://www.dhs.gov/interoperable-communications-across-borders>

⁵ CAUSE II Press Release <http://www.marketwatch.com/story/technology-demonstration-focuses-on-harmonizing-cross-border-emergency-communications-efforts-2013-03-06>

compelling reasons for cross-border collaboration (i.e., shared SA, mutual aid, geographic threats, etc.).

Philip C. Dawe, MEng, PEng., PMP
CSS

Original Signed By

Reviewed by:

Jack Pagotto
Section Head, Multi-Agency Crisis
Management S&T DRDC CSS

Original Signed By

Approved for release by:

Dr A.L. Vallerand
Document Review Panel A/Chair
DRDC CSS

Original Signed By

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The Canada–U.S. Resiliency II Experiment (CAUSE II) focused on Enhancing Trans-Border Resilience in Emergency and Crisis Management through Situational Awareness interoperability. The experiment successfully integrated and harmonized CA/US situational awareness systems and provided evidence that this S&T-based capability facilitates the development of shared situational awareness among the partnering EM organizations and enhances the planning, coordination and delivery of cross-border responses. This Letter Report briefly presents the methodology, key experiment results and recommendations to further advance Beyond the Border outcomes. Further details on CAUSE II are provided from the experiment video and CA/US joint report.

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