

*Horizontal Information Exchange within Federal Emergency
Operations Centers:*

Table Top Exercise

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IMPORTANT INFORMATIVE STATEMENTS

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PSTP 08-135 EMSI Horizontal Information Exchange within Federal Emergency Operations Centers

Table Top Exercise

Nov 17 2009 – Prep Day
Nov 25 2009 – Exercise Day
Dec 2 2009 – Hotwash



Exercise Briefing Package – Participants

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Executive Summary

Background

Responsibility for Emergency Management (EM) spans organizational structures. The Government Operations Center (GOC) was created by the federal government to maintain federal awareness of the status of events within real-time. The GOC informs federal departments through contacts within federal Emergency Operations Centers (EOCs) which play a critical role in effecting coordinated command and coherent control through the use of the Incident Command System/Unified Command. The EOCs also assist the overall federal response by facilitating interoperability and activation of Federal Emergency Response Plan (FERP) Emergency Support Functions. Effective incident response requires an ability to share planning assumptions and develop shared situational awareness using both voice and electronic communications that flow horizontally between EOCs. In short, reliable Horizontal Information Exchanges (HIEs) underpin the collaboration and communication between federal EOCs.

Command and control information systems rely on information exchange protocols and bridging legacy systems has proved a challenge. The evolution towards open standards and a common data model that is based on other recognized data models (e.g., HL7, CPSIN, JC3IEDM, NIEM, etc.) offers a potential solution to this challenge. No such standards have yet been accepted within Canadian EM community.

Objective

The objective of this project is to evaluate the impact of HIE at the Federal EOC level on the EOC Management capability.

Method

A three-phased Table Top Exercise (TTX) will be conducted to meet the objective of this study.

- *Prep Day:* The TTX will start with the development of the exercise “start-state” during the Exercise Prep Day.
- *TTX Day:* The full day TTX will use 6 scenario segments to exercise federal response and departmental actions focussing on the HIE between federal EOCs.
- *Hotwash:* A final debrief session will be conducted with federal stakeholders to discuss the findings derived from the TTX.

Results and Conclusions

Data gathered during the TTX will be analyzed and recommendations for an Improvement Plan/Roadmap will be reported in a formal document.

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Agenda

Prep Day – November 17, 2009

Time	Day 1 – Prep Day (Nov 17 th) 1135 Innovation Dr. Kanata <i>(Parking at rear of building please call 613.795.5556 for escort into building or proceed to front entrance)</i>	Lead
0845 – 0900	Arrival and Check-in <ul style="list-style-type: none"> • Coffee and amenities tour • Distribute Briefing Packages 	CAE PS
0900 – 0930	Welcome & Introductions Project Rationale and Status	Lead Federal Departments
0930 – 1000	Prep Day Overview <ul style="list-style-type: none"> • Briefing Package Overview • Information gathering requirements • Metrics 	CAE PS
1000 – 1015 Break		
1015 – 12 noon	HIE requirements <ul style="list-style-type: none"> • Scenario presentation • Architecture views (OV-5) • Data Collection 	All
Light Working Lunch 12 noon – 1300 (After a short bio break, please bring your lunch plate and rejoin briefing room.)		
1230 – 1300	Plenary Session	CAE PS
1300 – 1315	Open Discussion & Action Items for TTX Day (Nov 25th)	All

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Exercise Day – Nov 25, 2009

Time	Day 2 – TTX Day (Nov 25th) 1135 Innovation Dr. Kanata <i>(Parking at rear of building please call 613.795.5556 for escort into building or proceed to front entrance)</i>	Lead
0845 – 0900	Arrival & Check-in <ul style="list-style-type: none"> • Coffee and amenities tour • Distribute Briefing Packages 	CAE PS
0900 – 0915	Welcome & Introductions Presentation – Dr. Andrew Vallerand	All Director S&T Public Security (DSTPS) CSS
0915 – 0930	Exercise Day Overview <ul style="list-style-type: none"> • Updates to Briefing Package • Information gathering requirements Presentation on Prep Day Highlights by Mike Johnstone	CAE PS Manager, National Emergency Operations Center CFIA
0930 – 1000	Scenario Segment #1 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All
1000–1015 Break		
1015 – 1045	Scenario Segment #2 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All
1045 – 1115	Scenario Segment #3 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All
1115 – 1145	Scenario Segment #4 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All

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1145 – 1230 Lunch & Catch up on email/phonecalls!		
1230 – 1300	Scenario Segment #5 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All
1300 – 1330	Scenario Segment #6 <ul style="list-style-type: none"> • Round-table examination • HIE reqts capture 	All
1330–1345 Break		
1345 – 1445	Plenary <ul style="list-style-type: none"> • HIE requirements • Capabilities & Gaps • Architecture Framework product discussion 	CAE PS
1445 – 1500	Open Discussion & Action Items for Hotwash Day (Dec 2nd)	All

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Hotwash Day Dec 2, 2009

Time	Hotwash (Sept 24) 1135 Innovation Dr. Kanata <i>(Parking at rear of building please call 613.795.5556 for escort into building or proceed to front entrance)</i>	Lead
0845 – 0900	Arrival & Check-in <ul style="list-style-type: none"> • Coffee and amenities tour • Distribute Briefing Packages 	CAE PS
0900 – 0910	Welcome & Introductions Project & Exercise Status	Lead Federal Departments
0910 – 1000	Review of Exercise <ul style="list-style-type: none"> • General Scenario & Segments • Metrics Discussion • Architecture Products 	CAE PS
1000–1015 Break		
1015 – 1100	Tools Survey <ul style="list-style-type: none"> • Validation of Tools & HIE requirements • Open Standards 	CAE PS
1100 - 1130	Capability Gaps <ul style="list-style-type: none"> • Addressed vs. Enduring Gaps 	All
Light Working Lunch 1130 – 1230		
1200 - 1230	New Approaches to addressing HIE requirements within EOCs <ul style="list-style-type: none"> • People, Process, Tools 	All
1230 – 1300	Comments/Questions and Wrap up	All

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Participating Federal Departments

Several federal stakeholders were involved in the preparation and execution of this study. The level of participation was defined by each stakeholder. Participating federal departments and their associated mandates are presented in Table 1 below.

Table 1 Participating Federal Stakeholders

Federal Department	Mandate
Agriculture/Agri-Food Canada (AAFC)	Agriculture and Agri-Food Canada provides information, research and technology, and policies and programs to achieve security of the food system, health of the environment and innovation for growth.
Canadian Food Inspection Agency (CFIA)	The Canadian Food Inspection Agency (CFIA) ensures that Canadians have access to a continuous and secure supply of safe food by assessing food quality and inspecting commercial food products and manufacturers, and delivering quarantine services. CFIA also sets policy on, and monitors, plant and animal product imports to reduce the risk of disease and to sustain plant and animal health and safety.
Department of National Defence (Enterprise Information Security Environment DND(EISE))	Enterprise Information Security Environment (EISE) project is developing practices and solutions to address the link between information architecture (ontology/semantics) and the information security requirements of the DND/CF.
Government Operations Center (GOC)	To provide strategic-level coordination and direction on behalf of the Government of Canada in response to an emerging or occurring event affecting the national interest.
Natural Resources Canada (NRCan)	Natural Resources Canada (NRCan) seeks to enhance the responsible development and use of Canada's natural resources and the competitiveness of Canada's natural resources products. We are an established leader in science and technology in the fields of energy, forests, and minerals and metals and use our expertise in earth sciences to build and maintain an up-to-date knowledge base of our landmass.
Canada Border Services Agency (CBSA)	The Agency is responsible for providing integrated border services that support national

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	security and public safety priorities and facilitate the free flow of persons and goods, including animals and plants, which meet all requirements under the program legislation.
Department of Foreign Affairs and International Trade (DFAIT)	<p>The organization is mandated to:</p> <ul style="list-style-type: none"> • conduct all diplomatic and consular relations on behalf of Canada; • conduct all official communication between the Government of Canada and the government of any other country and between the Government of Canada and any international organization; • conduct and manage international negotiations as they relate to Canada; • coordinate Canada's economic relations; • foster the expansion of Canada's international trade; • coordinate the direction given by the Government of Canada to the heads of Canada's diplomatic and consular missions and to manage these missions; • administer the foreign service of Canada; • foster the development of international law and its application in Canada's external relations.
Public Health Agency Center (PHAC)	To protect and promote the health and safety for all Canadians through leadership, partnership, innovation, and action. The Agency works closely with provinces and territories by keeping Canadians healthy by focusing on effective efforts such as preventing chronic diseases like cancer and heart disease, preventing injuries, and responding to public health emergencies.

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General Information

Background

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Table Top Exercise (TTX) - Timeline of Events

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Capability-Based Planning Methodology

A capability is the ability and the capacity to perform a set of tasks required to achieve a desired effect to a specified standard under specified conditions. A capability is delivered by systems that consist of people, processes and tools.

This study will employ CAE PS's Capability Engineering and Design Approach (CEDA™) in order to evaluate the impact of HIE at the Federal EOC level, on the EOC Management capability that is conducted during a major emergency response in which the FERP is activated. CEDA™ is based on Capability-Based Planning methodology (CBP).

Background on CBP

The CBP was developed as an alternative to threat-based planning. It represents an attempt to break down traditional stovepipes and provide for transparency and coherence across stakeholders. CBP provides a more rational basis for making decisions on future acquisitions, and makes planning more responsive to uncertainty, economic constraints and risk. CBP provides a framework to support analysis and facilitate risk management. It focuses on goals and end-states and encourages innovation. It starts by asking questions regarding “*What do we need to do?*” rather than “*What equipment are we replacing?*”¹

CBP embraces functional analysis of operational requirements in response to a broad range of circumstances and challenges.² It is intended to be concept-led and top-down driven, to inculcate holistic system-of-systems thinking, foster innovation, and challenge and supplant an existing service focussed, platform-centric (stovepipe) culture.

CBP provides a method for identifying the levels of capability needed to achieve the strategy, a problem common across many defense forces. With the assistance of scenarios, CBP explicitly connects capability goals to strategic requirements.

CAE PS CEDA™ approach

An application of CAE PS's CEDA™ approach, which is based on CBP methodology, will be used to develop a model-driven solution for assessing the impact of HIE on the federal EOC Management capability of the participating stakeholders. The methodology (depicted in Figure 1 below) will examine HIE and associated communications requirements while incorporating open

¹ The Technical Cooperation Program (TTCP) Joint Systems and Analysis Group Technical Panel 3, *Guide to Capability-Based Planning*, www.dtic.mil/ttcp/JSA-TP-3-CBP-Paper-Final.doc.

² CBP has been construed to 1) include requirements definition, options analysis and acquisition/capability generation and 2) describe the front-end goal characterization. Confusion can exist because the two interpretations are often used interchangeably.

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standards, information exchange models and service oriented architecture elements. This approach includes architecture-driven identification of key concepts and requirements that are focused on improving information exchange efficiencies leading directly into a simulation-based analysis and evaluation through the conduct of a Table Top Exercise (TTX).

CEDA™ employs:

Data analysis

- *Architecture Product Development*: The development of architecture products is conducted as a data capture and analysis tool. These products enable the analyst to capture the people, processes and tools that exist (the “AS-IS”) or need to exist (the “TO-BE”) within a capability. This study will leverage the DHS Public Safety Architecture Framework (PSAF) to develop the architecture.
- *Scenario-Based Analysis*: A pandemic-based use case scenario has been developed to guide design and analysis activities within the context of a global pandemic.
- *Exercise Evaluation*: Exercise evaluation is conducted as a means to assess the capability under study and to develop an improvement plan that enhances this capability. In the current study, the impact of the people, processes and tools involved in HIE on the federal EOC Management capability during a major emergency response in which the FERP is activated will be evaluated among participating EOC stakeholders. The traditional CBP analytical framework (i.e., PARRI (Persistence, Agility, Reach, Range and Information framework) will be modified to focus in on the Information categories, and will use a targeted approach to investigate the following information characteristics:

Options analysis

- *Conduct Analysis*: Analyze HIE elements, within the context of the scenario, using a structured and replicable approach.
- *Develop “TO BE” architectures*: The CEDA™ approach enables the definition of “TO-BE” architectures that are flexible to changes over time including,
 - Capability enhancements (changes in people, process or tools);
 - Determination of integration requirements of new government assets (acquisition planning);
 - Incorporation of new information if mandate changes.
 - Future requirements can be analysed using multiple “TO-BE states in the architecture or within a virtual M&S environment without always having to conduct live exercises to determine impact on people, process and technologies.

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Improvement Planning

The architecture products and evaluation framework will direct subsequent analysis and improvement planning recommendations to areas with the greatest need and that, when augmented, will have the most significant impact on enabling HIE between federal EOCs. The application of this methodology supports rapid prototyping and the development of an extensible reference baseline that can be used to support exploration and simulation and, most importantly, exploited to provide evidence-based decision support.

Final Report

The final report will compile the method, analysis and interpretations leading to the development of recommendations and an implementation plan.

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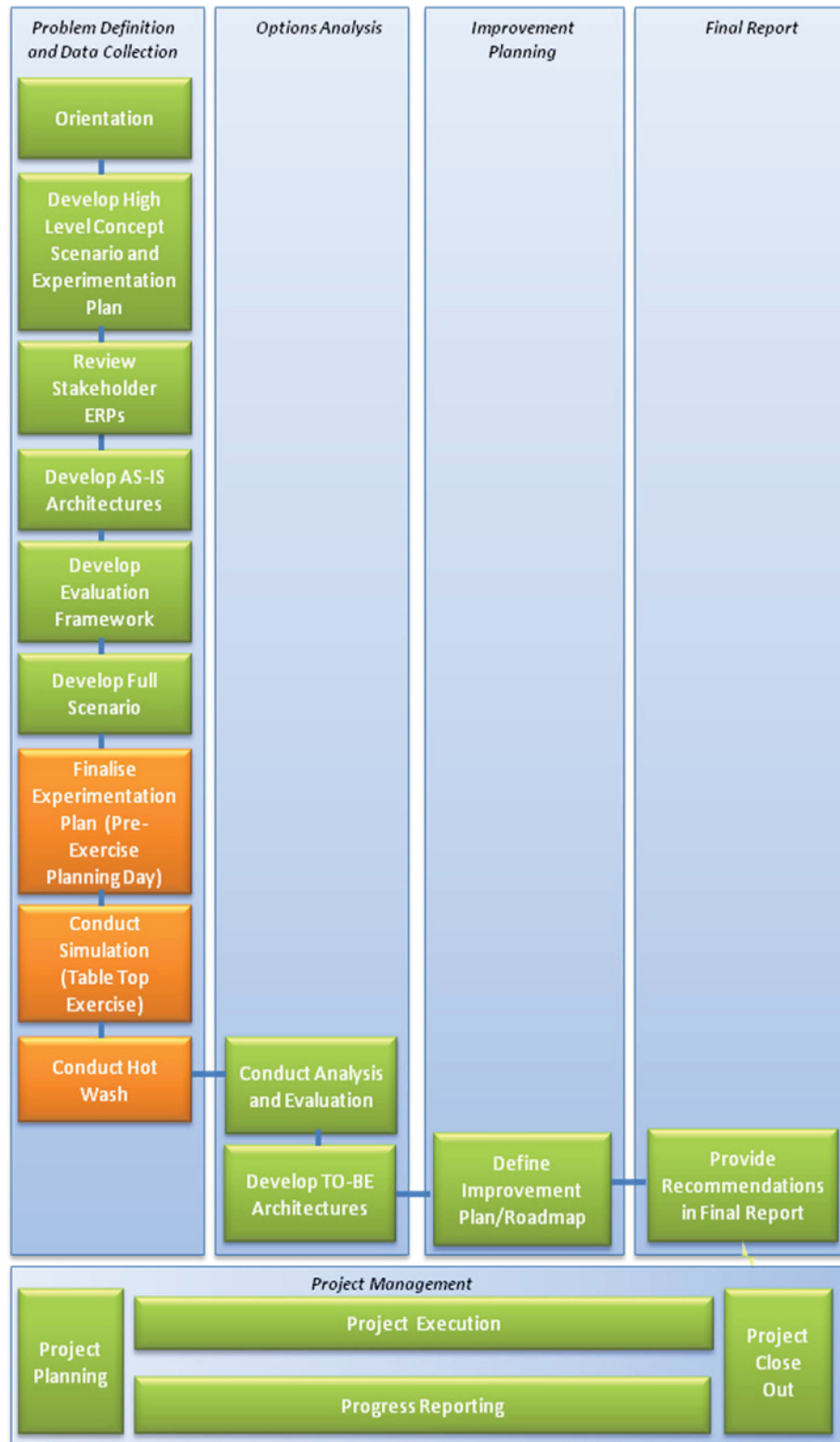


Figure 1 CEDA™ Methodology for PSTP08-0135EMSI

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Scenario (Master Events Scenario List – MESL)

A scenario was developed in consultation with the study stakeholders in order to direct the TTX in specific directions to elicit responses for the appropriate data collection. This section identifies the major components of the Master Events Scenario List (MESL) including,

- scenario assumptions;
- general scenario; and,
- scenario segments (divided into six scenario events).

Scenario Assumptions

The following assumptions were made during the development of the scenario:

- The scenario will exercise federal EM responses to a pandemic influenza outbreak based upon:
 - Documented EM processes from within AAFC, CFIA and other federal government documents;
 - H1N1 world wide outbreak of 2008-09; and,
 - US DHH National Planning Scenario for Pandemic Response.
- Engage multiple federal stakeholders to investigate HIE during a simulated pandemic influenza outbreak;
- Identify where individual departments become “engaged” (i.e., events requiring action by the department as opposed to normal monitoring/reporting) in the scenario;
- Examine HIE from both the sender and the receiver’s point of view; and,
- Secure information management requirements for all levels of security will be considered.

General Scenario

Intent: 1) To illustrate the methodology that will be used throughout the TTX and 2) To allow federal departments (e.g., PHAC, CBSA, DFAIT and the GOC) to outline their responses and identify information exchanges that would occur prior to the pandemic directly affecting Canada.

- In mid February, an outbreak of unusually severe respiratory illness is identified in Jiangmen, PRC (southern PRC). At least twenty-five cases have

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occurred, affecting all age groups. Twenty patients have required hospitalization at the local provincial hospital, five of whom have died from fulminating pneumonia and acute respiratory failure.

- Other outbreaks occur in early March in Guangzhou, Huizhou and Shenzhen. Minor item on International news media, WHO announces Phase 4 Pandemic.
- By the middle of April cases have appeared in South Africa ,UK, New Zealand Argentina, France, Australia and WHO moves to Phase 5. Young adults affected with an average case-fatality rate of 4 %. WHO announces Phase 6 pandemic at the beginning of May as a result of the extent of the spread and there is major media coverage worldwide.
- 4 Canadians in Australia, 3 in New Zealand have been hospitalized as a result of this strain of influenza and 2 Canadians have died in France. The families of the victims have contacted DFAIT requesting assistance.
- CDC in the US and NML in Winnipeg have confirmed that this is a new and more virulent strain of H1N1.

Scenario - First Canadian Event

Intent: To exercise the GOC's role in establishing the overall "business cycle" during an emergency and how this role affects the HIE between other federal department and agencies.

- During April, PHAC and CBSA begin to develop action plans in response to the increasing spread of the disease worldwide.
- In early May the Government Operations Centre (GOC) has adopted FERP response Level 2 based on the spread of cases throughout the country.
- The GOC will be producing two daily situation reports to be issued at 0800 and 1600h eastern.
- By June and July, all provinces and territories are affected and localized outbreaks are occurring throughout the country.
- By the beginning of September, throughout Canada, 1,200,000 confirmed cases of this new form of H1N1 flu virus were reported to the Public Health Agency of Canada (PHAC) including 56,456 hospitalizations nationally and 258 reported deaths in Canada.
- A number of Canadian citizens in Singapore have been contacting the High Commission demanding access to anti-virals. This is as a result of a Canadian national news report on Pandemic preparedness of the Federal Government where it was revealed that DFAIT missions around the world have access to anti-virals.

Scenario - Second Canadian Event

Intent: To examine the HIE managed by AAFC and NRCan with respect to their private sector infrastructure partners (i.e., industry).

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- By the beginning of October 2,400,000 cases of this new form of H1N1 flu virus were reported to PHAC including 123,981 hospitalizations and 516 deaths in throughout all provinces and territories in Canada.
- Reports (media and through industry indicate that a large number of farm workers nationally are contracting the illness particularly hard hit are the Lilydale Hatchery in Abbotsford, Horizon Poultry in Hanover, Ontario and a number of major farms in the Lethbridge Alberta area. McCain Foods in Florenceville has reportedly removed a shift and has cut production due to employee absenteeism.
- Petro Canada and Imperial Oil's refineries in Edmonton, Alberta have had to cut production due to worker absenteeism.
- Agri-Food industry groups report that approximately 25-32% absenteeism among workers both in production and processing sectors.
- In North America, consumer discretionary spending is down 27% as people are avoiding large supermarkets and malls.

Scenario - Third Canadian Event

Intent: To exercise the security implications and challenges associated with HIE within the context of an emerging food safety issue.

- Troops training in Wainwright Alberta begin to exhibit flu like symptoms while on pre-deployment training in late August. 25 % of the Battle Group has reported symptoms (approximately 300 persons) with 124 requiring hospitalization in Wainwright, Lloydminster, Viking and Edmonton.
- 12 cases stomach flu like symptoms within Task Force Afghanistan have been reported to the CF from overseas.
- Source of the outbreak in theatre traced to a particular lot of IMPs.
- By the end of September in Afghanistan, 147 Canadians are confirmed to have the new H1N1 strain (140 in Kandahar and 7 in Kabul). 10 require hospitalization and 2 are evacuated.

Scenario - Fourth Canadian Event

Intent: To exercise HIE during a suspected animal health outbreak and a human influenza pandemic.

- In early October, poultry on three poultry farms are suffering from flu like symptoms in the Abbotsford area (Lilydale Hatchery, Bradner Farms, and Fraser Valley Chick Sales).
- Abbotsford has 3500 confirmed human cases of this new form of H1N1.
- Concerns are raised by the BC Poultry Association to BCMAFF
- USDA has issued a statement expressing concern and that they are actively monitoring the situation and working with CFIA;
- CBSA, CFIA and DFAIT senior officials meet to discuss potential economic effect of any potential trade restrictions.

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- American water fowl hunters returning across the border at the Sumas WA crossing were stopped by US authorities and refused entry with their geese.
- One week after the initial report, the source of the incident was determined to be mycotoxins in feed provided by a local feed lot.

Scenario - Fifth Canadian Event

Intent: To exercise HIE between federal departments and the overall management of media.

- By early October absenteeism in the workforce has been reported as high as 35% nationally. Daily stories have appeared in all media about how companies are coping with the situation.
- A number of school boards nationally have suspended classes and three universities have adopted distance learning for some courses.
- The Bunge Canola Oil Plant in Fort Saskatchewan, the Maple Leaf Plant in Brantford, Ontario; the Montreal plant of Delta Dailyfood and Ocean Choice International L.P. of Burgeo, NL have all suspended operations due to worker absenteeism.
- Op-ed piece in a national newspaper written by a prominent retired federal veterinarian speculates on the effect the pandemic could have on the safety of Canada's food supply. The article refers to the lessons learned from the Listeria outbreak and the fact that the Maple Leaf plant in Brantford, Ontario is closed.
- Other Op-ed pieces speak to the potential risk to Canadians citing national and border security concerns.
- Newfoundland and Labrador appear to have a higher proportion of worker absenteeism with the pandemic than other provinces.

Scenario - Sixth Canadian Event

Intent: To exercise HIE during the conduct of a CFIA Business Continuity (BC) response. Also, to consider execution of a BC response by other participating federal departments which includes identification of BC requirements and client management.

- At the end of September, of the 76 CFIA inspectors in Newfoundland and Labrador, 30 have been off work as a result of contracting the new form of H1N1.
- 30 fish processing plants throughout the province that are listed to export to the European Union have had to cease or slow operations due to a lack of inspection services.
- The Canadian Ambassador to the EU reports that the EU has been meeting to determine if they should close their borders to Canadian sea food products until the inspection issue is clarified.
- A number of European media outlets have reported that the EU will suspend exports from Newfoundland and Labrador.

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Data Collection

The objective of this project is to evaluate the impact of HIE at the Federal EOC level on the EOC management capability that is conducted during a major emergency response in which the FERP is activated.

Data collection activities will be conducted prior to, during and after the TTX. The intent of these activities is to:

- Identify the “AS-IS” HIEs that are currently in place and the associated people, processes and tools that support HIE across the stakeholder organisations including the identification of the IM/EM Tools that are currently used during the conduct of an emergency management response;
- Design, plan and conduct an exercise to determine interoperability requirements for EOC capability management by examining existing HIEs that are currently implemented and their associated people, processes and tools; and
- Prioritize the interoperability requirements during an emergency response in which the FERP is activated.

The data collection activities will direct the analysis of new approaches to HIE requirements in order to provide recommendations for improvement planning to fully exploit HIE to improve the EOC Management capability.

“AS-IS” Architecture Framework Products

Using CEDA™, CAE PS has developed a series of architecture products to be employed for this project.

CEDA™ employs the development of architecture products as a data capture and analysis tool. An architecture product can be simply viewed as a set of blueprints which model or represent a wide variety of relationships inherent to the overall capability being managed. Architectures offer distinct advantages in structuring information and managing complexity, incremental development and implementation. They impose discipline and ensure use of a common language across diverse stakeholders.

Architecture frameworks enable the analyst to capture the people, processes and tools that exist (the “AS-IS”) or need to exist (the “TO-BE”) within a capability. Architecture frameworks are also referred to as Enterprise Architectures in industry, and have been successfully applied to assist companies to optimise interdependencies and relationships between business operations, clarify their underlying infrastructure and support applications across large distributed

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organisations³. The architecture framework outlines “what” the overall structured approach is for assisting interoperability and “how” the components will operate.

Architectures Defined

The architecture products completed for this project reflect the current state (“AS-IS”) and desired state (“TO-BE”) of relationships and interdependencies among the key stakeholders concerned with the management of an emergency response.

The architecture captures aspects of emergency response within federal EOCs and enables the project team to evaluate the Concept of Operations (CONOPS) of the “AS-IS” and “TO-BE” states for this study. In order to achieve these goals, selected views of the DHS Public Safety Architecture Framework (PSAF) will be applied to structure the information collected and to generate an appreciation of the HIE requirements during a federal emergency response. The framework provides the flexibility to select the data representation required to meet the project’s needs. It also provides the necessary documentation to allow the reader to “wade in” gradually, through the use of a layered approach, to an understanding of the architecture products and content.

The initial architecture product that was selected for the purposes of the current study was the OV-2: Operational Node Connectivity Description (OV-2). The OV-2 depicts the significant operational node dependencies associated with the information flow/exchange requirements necessary to conduct a federal level emergency response. The OV-2 is an important tool in translating concepts into capability gaps and linking operational nodes to activities.

Operational Views (OV)

An OV is a description of the tasks and activities, operational elements, and information exchanges required to accomplish missions. The OV contains graphical and textual products that comprise an identification of the operational nodes and elements, assigned tasks and activities, and information flows required between nodes. It defines the types of information exchanged, the frequency of exchange, which tasks and activities are supported by the information exchanges, and the nature of information exchanges.

It was determined that to best serve the needs of the current study, an OV-2 architecture data product should be generated:

Operational Node Connectivity (OV-2)

The objective of the OV-2 graphic and supporting documentation is to capture the key players and the interactions necessary to conduct the corresponding operational activities involved in a specific event/scenario (details of which are

³ GAO-04-798T, “The Federal Enterprise Architecture and Agencies’ Enterprise Architectures are Still Maturing,” May 19, 2004.

often captured in an OV-5 – Operational Activity Model). OV-2 is an important tool in translating concepts into capability gaps and linking operational nodes to activities.

The following figure illustrates the high-level view of the “AS IS” relationships at the federal level. Participating EOCs will play the role as Primary Lead Department (PLD) or Support Department (SD) to the federal level PLD (see

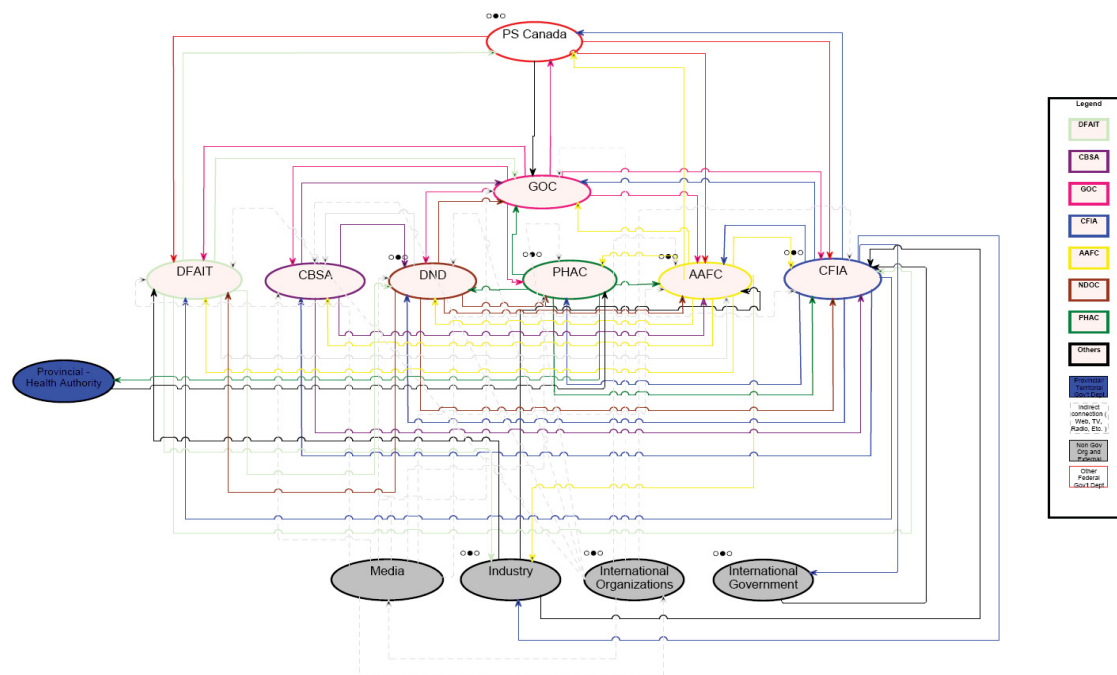


Figure 3). In this level of decomposition, both operational nodes (stakeholders) and need lines (information exchange paths) have been aggregated to depict the highest level of abstraction.

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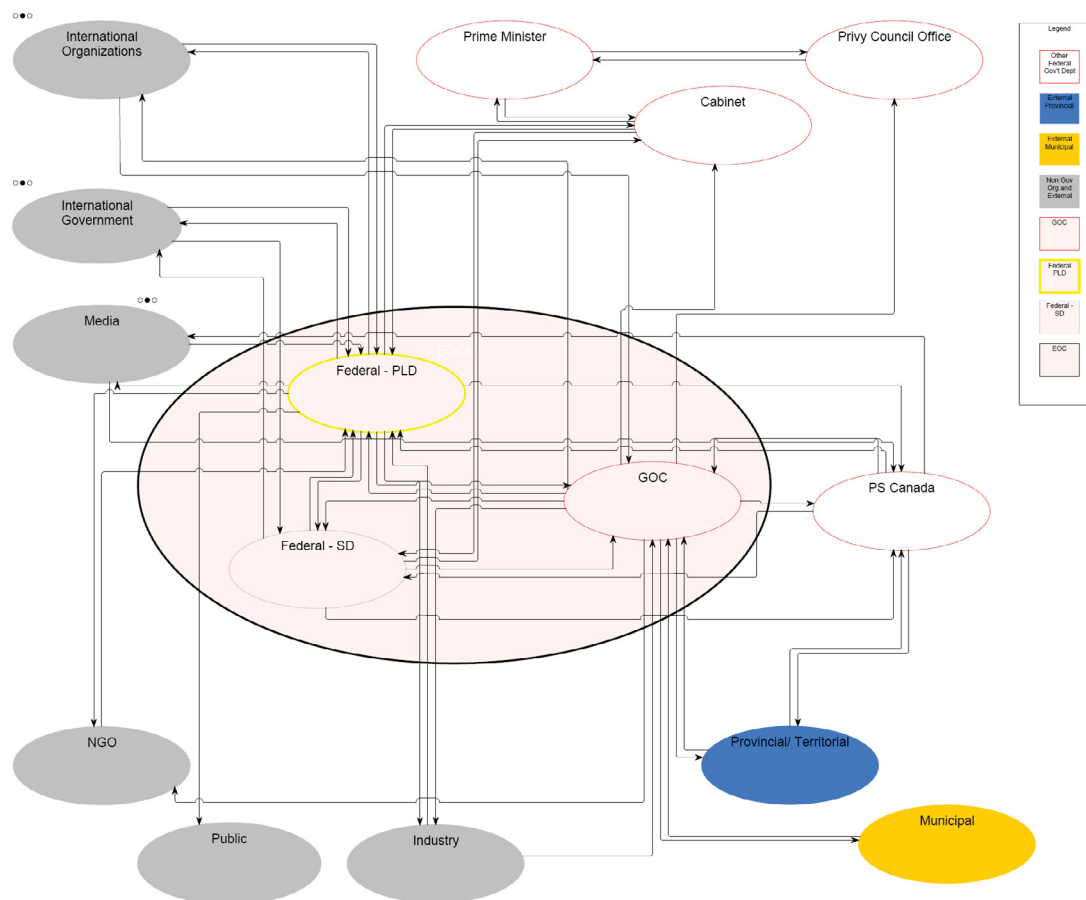


Figure 2 OV-2 – Generic Federal Top Level

In the case of this exercise, the HIEs of the GOC, PLD and multiple SDs will be examined through. The following OV-2 highlights the stakeholder EOCs and illustrates their HIE with each other. These relationships will be elaborated upon during the exercise within the context of their roles as PLD or SD within the Canadian emergency response framework at the federal level as guided by the FERP and departmental mandates.

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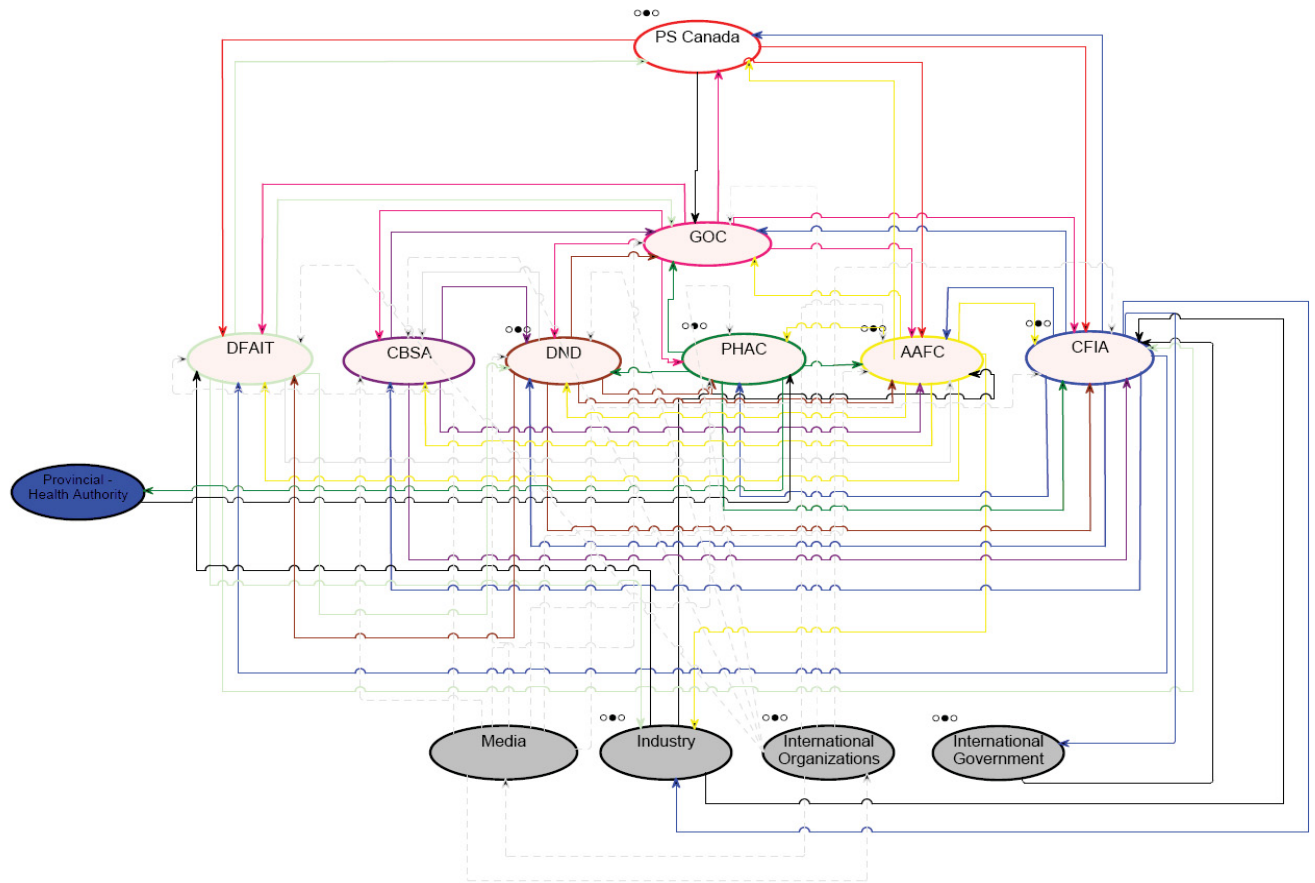


Figure 3 High Level Federal EOC OV-2

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Analysis and Evaluation

Data analysis, exercise evaluation and capability improvement planning play an important role in the CEDA™ approach through the assessment of capabilities (based on exercise objectives) and developing improvement plans that enhance the capabilities.

Analysis and evaluation activities that will be conducted in this study include:

- The definition of the HIE interoperability requirements;
- A Metrics-based evaluation of the impact of HIE on the EOC Management capability;
- The development of a “TO-BE” architecture product based on an examination of new approaches to HIE in the format of an options analysis; and
- The design of an implementation plan and roadmap.

HIE Interoperability Requirements Definition

The data collection activities, including the TTX, will feed into the tasks of assessing, developing, validating, and prioritizing HIE interoperability requirements. Requirements definition will focus on the ‘who, what, where, and why’ of the HIE. The ‘how’ of HIE will be investigated as part of the options analysis where the study team will look at new approaches and high-level tool characteristics such as open standards, to support the requirements.

Metrics-based Evaluation Framework

Metric frameworks provide a structure for understanding the current status of a capability. They can also be used for determining needs, setting improvement and strategic priorities, characterizing solution requirements, and evaluating solutions. These metrics are intended to provide insight into the exchange of information and the results will be used to develop the implementation plan for a way forward – the metrics are not intended to identify shortcomings of people or EOCs involved in the study.

The PARRI framework, consisting of Persistence, Agility, Range, Reach and Information elements is often chosen to frame the evaluation of the effectiveness of an existing capability. Recent findings from the AAFC EOC scoping study (2008) that employed this framework indicated that further investigation of the Persistence and Information elements would improve the EOC Management capability. Consequently, the present study is designed to focus on the *Information* requirements that will facilitate emergency management responses between federal-level EOCs to generate a fuller understanding of the requirements that will improve the EOC management capabilities.

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The following high level categorisation will provide a framework for the metrics that will be employed to evaluate the HIE between federal EOCs during the conduct of an emergency management response considering the ability to achieve:

- Information Precision (adhere to protocol/standards, relevance)
- Information Quality (accuracy, consistency, availability)
- Information Security (classification, access control)
- Information Sharing (facilitate collaboration and common situational awareness)
- Information Survivability (withstand future enquiry)
- Information Timeliness (support time critical decision making)

The results of the Information-focussed evaluation will help to identify the priority areas for improvement planning using these six high level classifications that are presented on the following pages.

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Information Precision Metrics

For the purpose of this exercise Information Precision is defined as the ability for information exchange and products to adhere to protocol/standards. It will also relate to the ability for information to be relevant to receiver/requester. The following information precision metrics will be evaluated during the TTX:

Table 2 Precision Metrics

Metric Ref	Performance Measure	PARRI Information Category
PR-1	Provide clear SA related to departmental assets to other EOCs	Precision
PR-2	Departmental mandates are known	Precision
PR-3	EOC has SOPs that address need for efficient and accurate HIE	Precision
PR-4	Clearly defined and documented processes for sharing information between organisations (1:1)	Precision
PR-5	A clearly defined process or procedure is used to disseminate information and products across government (1:many)	Precision
PR-6	A clearly defined process or procedure is used to disseminate information and products with the private sector	Precision
PR-7	A clearly defined process or procedure is used to disseminate information and products with provincial or municipal governments	Precision
PR-8	A set of communications SOPs are in place and implemented to include operational and technical elements	Precision
PR-9	Memoranda of understanding (MOU) or similar agreements between appropriate entities are in place for information sharing into and out of an organization.	Precision
PR-10	Communication plans are reviewed annually and updated as necessary	Precision
PR-11	Sit Reps that are communicated to other EOCS have a standard format to enhance interpretation	Precision

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Information Quality Metrics

For the purpose of this exercise Information Quality is defined as the ability for information exchange to be available to provide accurate and consistent information products. The following information quality metrics will be evaluated during the TTX:

Table 3 Quality Metrics

Metric Ref	Performance Measure	PARRI Information Category
QU-1	Ability to communicate on high priority legal and regulatory issues satisfactorily	Quality
QU-2	Ability to make decisions considering other stakeholders (upstream and downstream effect)	Quality
QU-3	Mechanisms within the information sharing network to provide feedback and/or follow-up information as needed are in place (traceability for decision making)	Quality
QU-4	Communications process and tools are used in pertinent everyday activities as well as emergency incidents to ensure users are familiar with the systems and routinely work in concert with one another.	Quality
QU-5	Percent of communications sent and received that are completely understood without ambiguity by the sender or the intended receiver	Quality

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Information Security Metrics

For the purpose of this exercise Information Security is defined as the ability to provide for classification and access control for information exchange. The following information security metrics will be evaluated during the TTX:

Table 4 Security Metrics

Metric Ref	Performance Measure	PARRI Information Category
SE-1	Personnel are aware of security levels held in other EOCs for the purpose of communicating information securely, i.e. secure distribution lists exist that contain only contacts with appropriate clearance levels	Security
SE-2	The appropriate number of personnel have security clearances to meet Stakeholder requirements/needs	Security
SE-3	Federal agencies have a process in place to declassify or provide tear lines for relevant information and/or intelligence	Security
SE-4	The department has a clearly defined, implemented, and audited process for preventing, reporting, and addressing the inappropriate disclosure of information and/or intelligence	Security
SE-5	Exercises test the process for preventing, reporting, and addressing the inappropriate disclosure of information and/or intelligence	Security
SE-6	Personnel are aware of the security considerations that must be made and the procedures that must be used to handle secure information	Security
SE-7	Security requirements for sending information from other stakeholders are known to personnel	Security
SE-8	Security requirements for receiving information from other stakeholders are known to personnel	Security
SE-9	Security requirements for housing secure information are understood by personnel	Security

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Information Sharing Metrics

For the purpose of this exercise *Information Sharing* is defined as the ability of the information exchange to facilitate collaboration and common situational awareness. The following information sharing metrics will be evaluated during the TTX:

Table 5 Sharing Metrics

Metric Ref	Performance Measure	PARRI Information Category
SH-1	Knowledge of EOC C2 structure communicated across stakeholders as appropriate.	Sharing
SH-2	Stakeholders know who to contact, i.e. up to date contact lists exist	Sharing
SH-3	Ability to exchange data and voice with participating entities	Sharing
SH-4	Mechanism exists to provide periodic situation reports to all interested parties	Sharing
SH-5	Appropriate stakeholders identified for emergency response coordination	Sharing
SH-6	Training and exercise programs include interaction with multiple stakeholders	Sharing
SH-7	A multi-agency and multi- Stakeholder governance structure is in place to enable communications interoperability planning and coordination	Sharing
SH-8	A common operating picture (COP) for real time sharing of information with all the participating entities can be established as required.	Sharing
SH-9	Command and control policies are in place to achieve interoperability as necessary.	Sharing
SH-10	Preparation to receive liaison personnel has been made and can be implemented.	Sharing
SH-11	Frequency with which informational distribution lists with points of contact are updated	Sharing

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Information Survivability Metrics

For the purpose of this exercise Information Survivability is defined as the ability for the information exchange products to withstand future enquiry, enabling transparency and traceability for decision making. The following information survivability metrics will be evaluated during the TTX:

Table 6 Survivability Metrics

Metric Ref	Performance Measure	PARRI Information Category
SU-1	Mechanism for ensuring communication links across departmental EOC shifts exists	Survivability
SU-2	Frequency in which all critical communication links have been properly identified and tested	Survivability
SU-3	Stakeholder in cooperation with providers of tele-communication services have ability to resolve any single failure point	Survivability
SU-4	Stakeholder has identified all critical circuits	Survivability
SU-5	Stakeholder has created/tested/deployed alternate process for sharing information with external stakeholders.	Survivability
SU-6	Stakeholder has an effective process for assessing the status of communication links with external stakeholders.	Survivability
SU-7	Exercises test alternative, supplemental, and back-up mechanisms for routing information and/or intelligence to the necessary agencies	Survivability
SU-8	Individual agencies across the Stakeholders involved have operable communications systems in place.	Survivability
SU-9	Appropriate levels of redundant communication systems are available	Survivability

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Information Timeliness Metrics

For the purpose of this exercise Information Timeliness is defined as the ability of information exchange to support time critical decision making. The following information timeliness metrics will be evaluated during the TTX:

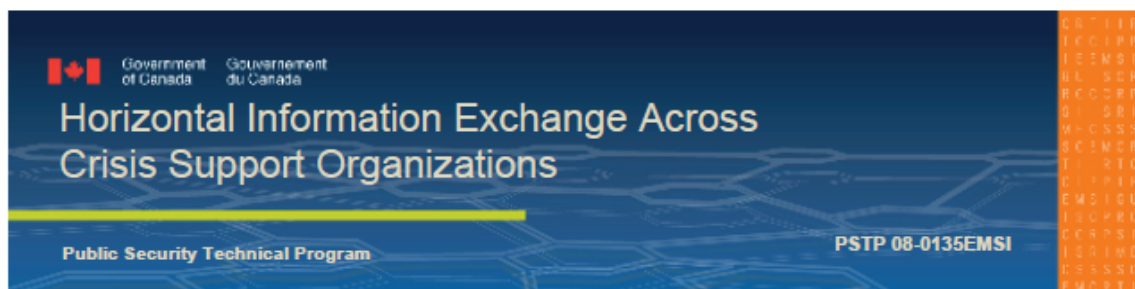
Table 7 Timeliness Metrics

Metric Ref	Performance Measure	PARRI Information Category
TI-1	Chronology of information updates is clearly labelled and order is maintained	Timeliness
TI-2	Ability to communicate EOC activation and operation to other stakeholders in a timely manner	Timeliness
TI-3	External information enables planning/'heads-up' activities	Timeliness
TI-4	Time to issue RFI	Timeliness
TI-5	Time for Stakeholder to produce a situation report	Timeliness
TI-6	Distribution of sit reps in both official languages is timely.	Timeliness
TI-7	Frequency in which Stakeholder will provide situation reports	Timeliness
TI-8	There are adequate numbers of trained personnel at all levels (especially at dispatch or communications centers) to process and disseminate information (i.e. Ops cell staffed appropriately)	Timeliness
TI-9	Appropriate personnel are trained in processing and disseminating information and intelligence	Timeliness
TI-10	Time in which relevant information received from one stakeholder is shared within the organisation	Timeliness
TI-11	All personnel are trained to operate communications systems according to their role at an incident	Timeliness
TI-12	Information requested through RFIs received in time to support decision making within own organization	Timeliness

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Study Fact Sheet



PSTP Mission Area:
Emergency Management and Systems
Interoperability

Partners:
Lead Federal Department: Agriculture
and Agri-Foods Canada (AAFC)

Additional Partners:

- Canadian Food Inspection Agency (CFIA)
- DND Enterprise Information Security Environment (EISE)
- CAE PS (Canada) Inc.



Objective:
To evaluate horizontal information exchanges during emergencies at the Emergency Operations Centre (EOC) level and define requirements through an architecture-driven approach that

includes the planning and execution of a one day Command Post Exercise.

Expected results:

- Existing architecture to identify information exchange requirements associated with the key capabilities, activities, tasks and functions of emergency response organizations as an incident unfolds and escalates to engage Federal resources
- Application of a metrics-based analysis of an EOC-level exercise to develop the capacity to conduct analysis against capabilities
- Architecture to support future adoption of a *replicable* capability-based approach within the Canadian emergency management community

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Notes Page

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Diagram Space

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Acronym List

AAFC	Agriculture/Agri-Food Canada
BC	British Columbia
BCMAFF	BC Ministry of Agriculture, Food and Fisheries
CAE PS	CAE Professional Services
CBP	Capability-Based Planning
CDC	Center for Disease Control
CEDA™	Capability Engineering and Design Approach
CF	Canadian Forces
CFIA	Canadian Food Inspection Agency
CONOPS	Concept of Operations
CPSIN	Canadian Public Safety Information Network
DFAIT	Department of Foreign Affairs and International Trade
DHS	Department of Homeland Security
DND	Department of National Defence
EISE	Enterprise Information Security Environment
EM	Emergency Management
EMSI	Emergency Management & Systems Interoperability
FERP	Federal Emergency Response Plan
EOC	Emergency Operations Centers
EU	European Union
GOC	Government Operations Center
HIE	Horizontal Information Exchange
HL7	Health Level 7
IM	Incident Management
IMPs	Individual Meal Packets
JC3IEDM	Joint Consultation, Command and Control Information Exchange Data Model
MESL	Master Events Scenario List
NEIMS	National Education Infrastructure Management System
NML	National Microbiology Laboratory
NL	Newfoundland & Labrador
NRCan	Natural Resources Canada
OV	Operational View
PARRI	Persistence, Agility, Reach, Range and Information
PHAC	Public Health Agency of Canada
PRC	Peoples Republic of China
PSAF	Public Safety Architecture Framework
SV	System View
TTX	Table Top Exercise
US DHH	United States Department of Health and Human Services
USDA	United States Department of Agriculture
WA	Washington
WHO	World Health Organization

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