Communications Interoperability Strategy for Canada

January 2011

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Record of Amendments

Version	Date	Pages	Amended by	Changes
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V2.1 Second Draft	6 Mar 2009	All	CCIP Working Group	Several revisions to contents and format.
V3	15 July 2009	All	PS	Several revisions
V4	31 March 2010	All	CCIP Working Group/PSIC Working Group	Several Revisions and updated Action Plans
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V5.2	30 Sept 2010	All	CCIAP Working Group	Renaming, restructuring and rewrites throughout the document following consultation
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V5.4	5 Oct 2010	All	Strategy Review Group	Revision
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V5.6	7 Oct 2010	All	Strategy Review Group	CANUS
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V5.8	15 Oct 2010	All	Strategy 2010 Review Group	Incorporation of comments from DG Preparedness and Recovery
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V6.0	20 Oct 2010	Continuum	Strategy Review Group	Final review
V6.2	04 Nov 2010	All	Strategy Review Group	Comments/SOREM
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V6.4	10 Nov 2010	All	All	Comments/SOREM
V6.5	15 Nov 2010	All	Strategy Review Group	Comments/SOREM

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Executive Summary

The *Communications Interoperability Strategy for Canada* is a strategic document that sets goals and identifies key national priorities to enhance governance, planning, technology, training and exercises to promote interoperable voice and data communications. The Strategy, through its Action Plan, provides a series of action items, including milestones, to help emergency responders and relevant government officials make measurable improvements in day-to-day, as well as emergency communications, on an annual basis.

This Strategy is the result of the collaborative effort of leaders from across Canada representing all levels of governments and emergency response services. The desired end-state of the Strategy is that emergency responders can communicate as needed and as authorized across all disciplines and between all levels, on demand. By promoting day-to-day usage of interoperability tools, the response to large scale events can be more readily accomplished.

The Canadian Communications Interoperability Plan (CCIP) sought the development of a national policy framework, including appropriate regulatory changes and spectrum allocations that would encourage local and regional interoperability. Existing technical and organizational impediments would be resolved by the development of common, open technical standards and standard operating procedures, which would then be used in day-to-day operations to enhance emergency personnel safety and improve efficacy. Practice and exercise would enhance the use of these day to day techniques in larger, more complex events (increased scale and scope).

In the event of a large-scale, complex emergency in Canada, no single agency at any level of government would have the required capacity and expertise to act unilaterally. Responding to such incidents would require cross-jurisdictional and potentially cross-border coordination amongst emergency responders which would require a level of emergency communications interoperability, that currently does not exist   This Strategy, therefore, promotes the vision of a comprehensive and integrated capability for communications interoperability across Canada and coordinated with United States partners as required.

Senior Officials Responsible for Emergency Management (SOREM) is the body responsible for overseeing this Strategy as well as the accompanying Action Plan. As outlined in the Emergency Management Framework, this Strategy in an F/P/T initiative that is supported by Ministers and aligned with existing frameworks. The overarching intention of this document is to assist the F/P/T/ community responsible for emergency management, and first responders, to work in a coordinated manner to respond to emergency situations involving a response by more than one jurisdiction, while respecting federal, provincial and territorial laws, regulations and existing plans. The extent of participation by any jurisdiction is encouraged, but remains voluntary.

Background

The *2003 Public Safety Radio Communications Project Report*, known as the *L'Abbé Poirier Report*[1] detailed the lack of cohesive strategic planning and policy development in relation to spectrum resource requirements, standards, and funding, among other recommendations.

In 2005[2] and again in 2008[3], the Senate Committee on National Security and Defence (SCONSAD) identified the need for a National Strategy for Interoperable Communications for emergency response. SCONSAD recommended that Public Safety Canada (PSC) involve provincial and municipal partners in the development and implementation of a National Public Safety Radio Communications Strategy within two years (by 2010).

In 2007, the Canadian Association of Chiefs of Police (CACP), Canadian Association of Fire Chiefs (CAFC), and Emergency Medical Services Chiefs of Canada (EMSCC) joined forces with the Canadian Police Research Centre (CPRC) to create the Canadian Interoperability Technology Interest Group (CITIG). This initiative brought together representatives from public safety, industry, academia, government, and non-governmental organizations to work collectively on the future of Canadian public safety interoperability. This initiative also led to the development of the CCIP, which set out a strategy to improve local and regional capacity to interoperate using the Interoperability Continuum as a means of pointing the way forward, suggested action items, and criteria for measuring success along the way. (A Canadian version of the Interoperability Continuum is attached as Appendix 1.)

At its first annual conference in March 2008, the CITIG membership established a working group under the joint leadership of Public Safety Canada to move the issue of interoperability forward. Public Safety Canada, in partnership with CITIG, developed the Canadian Communications Interoperability Plan (CCIP). While the CCIP remains an important starting point with respect to moving forward on interoperability, it has evolved into this Strategy and Action Plan.

These partnerships, developed to advance the agenda on interoperability with respect to both voice and data, also ensure that a collaborative approach to the issue of interoperability as a whole is maintained.

In 2009, Federal, Provincial, Territorial (F/P/T) Senior Officials Responsible for Emergency Management (SOREM) established the Interoperability Sub-Working Group co-chaired by Public Safety Canada. Accordingly, this Strategy is the outcome of the collaborative effort of leaders from across Canada representing government, police, fire, and emergency medical services, in consultation with their stakeholder communities.

In her 2009 Report to the House of Commons, the Auditor General[4] referred to voice communications as the main constraint to interoperability, particularly, the limitations of "fire, police and ambulance services to talk to one another and to communicate across jurisdictions in an emergency."

In addition, Public Safety Canada has worked with federal and provincial law enforcement agencies to improve data interoperability as these agencies acknowledge that the lack of common standards for the exchange and use of data is a serious impediment to

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1   *Public Safety Radio Communications Project*, Final Report, Prepared by RBP Associates and L'ABBE Consulting Services under contract with Industry Canada, March 2003
2   *National Emergencies: Canada's Fragile Front Lines*, Standing Senate Committee on National Security and Defence, VOLUME 1, March 2004
3   *Emergency Preparedness in Canada* Report of the Standing Senate Committee on National Security and Defence, Volume 1, Second Session, Thirty-ninth Parliament 2008
4   *Report of the Auditor General of Canada to the House of Commons (Fall)*, Office of the Auditor General of Canada, Chapter 7, Emergency Management—Public Safety Canada, Office of the Auditor General of Canada 2009

effective interoperability. The 2007 report on cross-border data exchange[5] concluded that Canadian and U.S. law enforcement agencies would benefit from the adoption of a common standard of information exchange.

Parallel efforts are underway in Canada and the U.S. to implement data standards for public alerts, incident information, resource information, and information pertaining to critical infrastructure. This Strategy will improve visibility of these efforts and enable stakeholders to influence the development and use of common standards for information exchange.

In 2009, the CACP Informatics Committee established a sub-Committee to deal specifically with information exchange and data standards. Subsequently, Public Safety Canada in partnership with CACP is working to develop a draft *National Data Quality Standards Strategy*. As part of its role in that Strategy, Public Safety Canada and the Centre for Security Science (CSS) jointly sponsored a study to establish a data standard of choice for police agencies. The report[6] issued in August 2010, recommended the adoption of the National Information Exchange Model (NIEM).

Purpose

The purpose of the *Communications Interoperability Strategy for Canada* and its Action Plan is to provide a structure for the creation of national policies, standards, and plans to improve responder communications capabilities in support of safety, operational, procurement and infrastructure efficiencies, and ultimately increased citizen safety and security.

Interoperable communications supports the responder community through the development of a basic structure which will guide the creation of sustainable capabilities, uniform and consistent standards, and steer investments in communications interoperability policies, programs, technology, equipment, training, and best practices.

Each jurisdiction within Canada tasked with emergency response will be encouraged to develop models for response based on the framework agreed upon by SOREM and supported by the emergency responder community. Local jurisdictions will be able to develop plans which support provincial/territorial plans. Emergency communications is generally defined as the ability of emergency responders to exchange information via data, voice, and video, on demand, in real time, as needed and as authorized, to complete their missions.

Emergency communications consists of:

Operability: The ability of emergency personnel to establish and sustain communications in support of mission operations.

Interoperability: The ability of emergency personnel to communicate between jurisdictions, disciplines, and levels of government, using a variety of systems, as needed and as authorized.

Continuity of Communications: The ability of emergency response agencies to maintain communications in the event of damage to, or destruction of, the primary infrastructure.

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5 Cross Border Data Exchange: Comparison of Data Standards, Version 1.0, Cross-Boarder Crime Forum Committee, April 2007.
6 Developing a National Data Quality Standard (NDQS) Strategy, Final Report, prepared by Lansdowne Technologies Inc for the Canadian
   Association of Chiefs of Police, January 2009

Successful implementation of this Strategy will enable the various Federal, Provincial, and Territorial levels of government to work collaboratively and in an integrated manner, with all those agencies having an emergency role. The Strategy is equally applicable to daily operations and times of crisis or emergency.

The outcome will be national capabilities that are relevant and effective in meeting the needs of the emergency management and response community.

The expected results are:

■ More efficient use of resources and capabilities;
■ Improved service to the public and better outcomes; and
■ A safer operating environment for emergency workers.

Scope

The Strategy sets in place the conditions that will enhance interoperability when required. In this context the Strategy supports day-to-day operations, the execution of planned events, the response to local regional, national and international emergencies, and the components of the Interoperability Continuum.

This Strategy promotes the vision of a comprehensive and integrated capability for communications interoperability across Canada as well as in collaboration with the United States when appropriate. The Strategy frames a scalable, responsive, dynamic, sustainable, and evidence-based approach for those who contribute to the management, of and response to, emergency events. The Strategy also takes into account the changing nature of threats, vulnerabilities, and the varying contributions and capabilities related to these events in Canada.

The Strategy recognizes that Communications Interoperability is a multi level, multi jurisdictional responsibility and the level of participation is based on voluntary implementation.

Canada – United States Partnership

The Strategy's Action Plan includes the collaborative work between Public Safety Canada and the United States Department of Homeland Security. This work includes activities that are underway or planned at the federal level, as well as the provincial/territorial and state level, or cross-regional.

The Office of Emergency Communications (OEC) within the Department of Homeland Security (DHS) has made advances in the area of interoperable communications and has shared information on this progress with Public Safety Canada. This partnership will enable all parties to move forward together sharing strategic and technical information.

Public Safety Canada, and the Department of Homeland Security's Office of Emergency Communications have worked with stakeholders to identify priorities for joint work to improve responder communications interoperability. This work will continue through a Canada/United States (CANUS) Interoperability Working Group and will be reflected in the Action Plan.

Strategic Context

The majority of emergencies are essentially local in nature. The process of managing an emergency and executing the activities necessary to respond to the situation begins at the community level with emergency personnel. F/P/T governments recognize the importance of interoperability amongst the emergency personnel, as well as the responsibilities of emergency management as described in the federal *Emergency Management Act*, and in the respective provincial/territorial legislation.

In the event of a large-scale, complex emergency or event in Canada, no single agency at any level of government would have the required authority and expertise to act unilaterally. A complex emergency or event is one that triggers a variety of mandates, crosses jurisdictional boundaries, and requires an approach that aligns policy and integrates efforts by federal, provincial, regional, and local responder organizations. Such events may also require support from international partners.

From day-to-day incidents to large-scale emergencies, emergency responders are often disadvantaged by the inability to communicate or share critical voice and data information with other jurisdictions or disciplines. This inability to communicate threatens the safety and security of both emergency responders and Canadians.[7]

Emergency communications is defined as the ability of emergency responders to exchange information via data, voice, and video as authorized, to respond to situations. Emergency response agencies, at all levels of government, must have seamless interoperable communications to manage the response, establish command and coordination, maintain situational awareness and function within a common operating framework. This will lead to improved response capabilities and provide a more comprehensive approach to disaster management, which will lead to increased safety for all Canadians.

Domestically and internationally, Canada has learned firsthand how crucial effective emergency communications are to response and recovery efforts. This lesson was learned during the ice storm of 1998, the response to the Haiti earthquake, and the response to hurricane Katrina. The more recent experiences of the 2010 Olympic Winter Games and the G8/G20 Summits reinforce the view that interoperable communications are required for the full spectrum of response ranging from local incidents to major events.

Equally important are the smaller and more frequent incidents that occur every day in communities across Canada, such as natural and human induced disasters. These events often expose the lack of communications interoperability capabilities and the inability of emergency responders and government leaders to manage response activities and perform essential functions.

Day-to-Day Operations

Information is the lifeblood of effective day-to-day operations within the public safety community. In making countless decisions every day, officials must have immediate access to timely, accurate, and complete information. It has become clear that effective decision-making requires information that must often be shared across a broad landscape of systems, agencies, and jurisdictions. For example, the adoption of common tools such as open standards is a key element in enabling public safety agencies to deal with this growing and complex problem.

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7 *Public Safety Radio Communications Project*, Final Report, Prepared by RBP Associates and L'ABBE Consulting Services under contract with Industry Canada, March 2003

This Strategy envisions that the emergency management and response communities will adopt common or compatible processes and tools that enable multi-agency coordination and joint service operations.
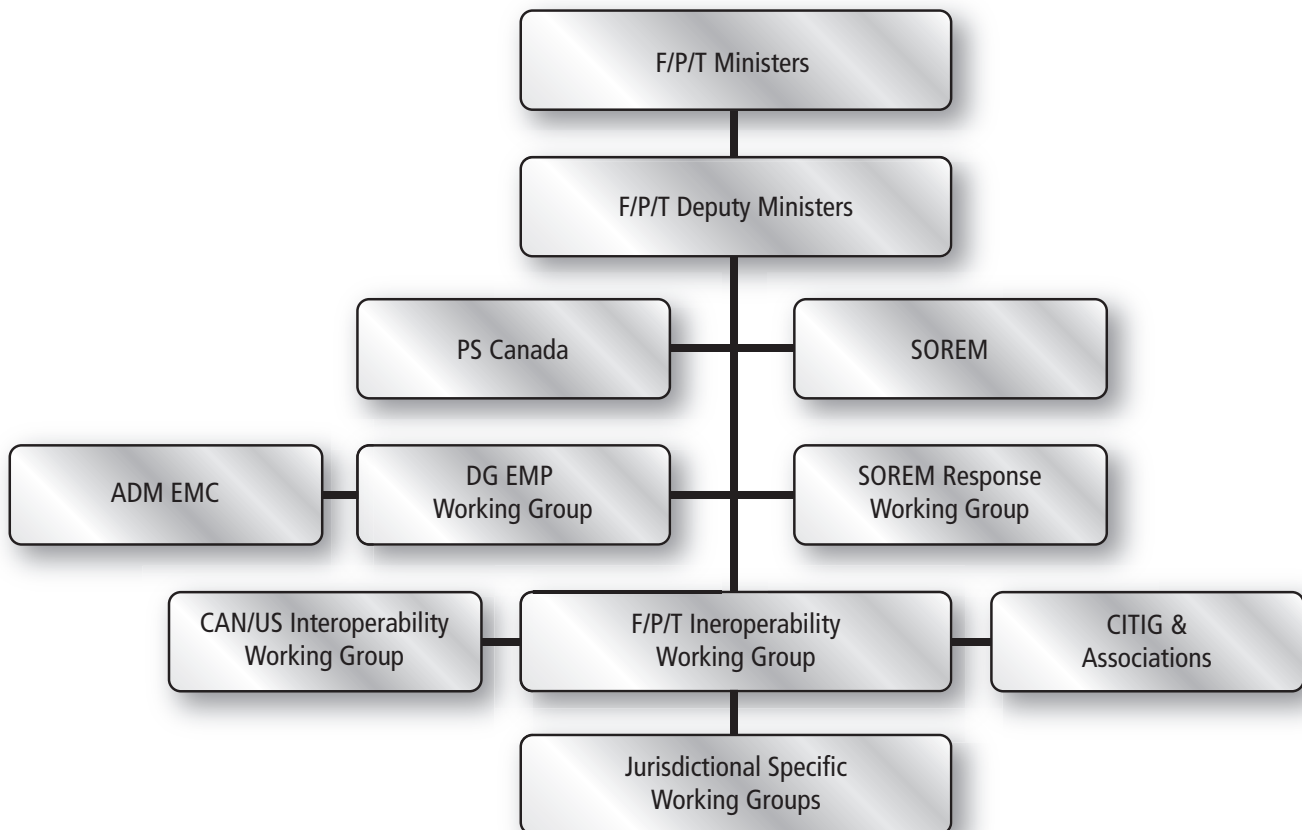
Governance

This Governance structure documents the intended national approach to advancing the implementation of communications interoperability as informed decision-making in an effective framework.

Governance Model

The activities related to the *Communications Interoperability Strategy for Canada* will be implemented within the existing SOREM shared F/P/T governance structure involving stakeholders working together through appropriate channels. The activities related to the Action Plan supporting this Strategy will be implemented incrementally, building on good practices and results achieved.

Figure 1 outlines the governance structure supporting this Strategy at the national level.

Figure 1: Interoperability Governance

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                    │   F/P/T Ministers   │
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                    │ F/P/T Deputy Ministers │
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        ┌──────────────┐        ┌──────────────┐
        │  PS Canada   │        │    SOREM     │
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│ ADM EMC  │ │   DG EMP      │  │ SOREM Response   │
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This governance model requires participation and commitment of resources at all levels of government.

Senior Officials Responsible for Emergency Management (SOREM)

SOREM sets out the strategic direction of this Strategy and also provides the single point of coordination among the national players in support of its implementation.

1. SOREM sets the priorities for activities identified in the Action Plan based on recommendations from the SOREM Response Working Group.
2. SOREM is responsible for implementation of the strategy, the execution of the Action Plan, and recommending improvements to the F/P/T Deputy Ministers for approval.
3. SOREM will review and monitor the implementation of the Action Plan annually.

SOREM Response Working Group

The SOREM Response Working Group is responsible for facilitating the implementation of all aspects of the Strategy. This Working Group provides oversight and guidance to the F/P/T Interoperability Working Group.

Public Safety Canada (PSC)

1. Public Safety Canada engages with national and international stakeholders (e.g., other government departments, private sector, non-governmental organizations, U.S. Department of Homeland Security) to ensure the Strategy stays relevant and continues to reflect all around priorities.
2. PSC may coordinate multi-stakeholder projects, where applicable.
3. PSC provides the Communications Interoperability Secretariat.

Assistant Deputy Minister Emergency Management Committee (ADM EMC)

ADM EMC provides a forum for senior leadership discussions regarding emergency management in the Government of Canada in accordance with its responsibilities described in the Federal Emergency Response Plan (FERP).

Director General Emergency Management Policy (DG EMP)

DG EMP provides oversight and guidance to federal interdepartmental groups on interoperability issues.

Federal/Provincial/Territorial Interoperability Working Group

Public Safety Canada co-chairs this Working Group with a co-chair from a province or territory. The Interoperability Working Group engages with other stakeholders (e.g. other government departments, emergency service organizations, the private sector, non-governmental organizations, and US Department of Homeland Security) to ensure the Strategy stays relevant and continues to reflect the principles approved by Ministers.

It is the responsibility of P/Ts to lead communications interoperability activities in their respective jurisdictions.

The Interoperability Working Group will report to SOREM annually, or more frequently if necessary, on the progress in implementing the Action Plan and will make recommendations for amendments.

Jurisdictional Specific Working Groups

A Working Group that is focussed on various interoperability issues within a P/T jurisdiction.

Consultative Forum

The Consultative Forum is facilitated through CITIG and allows key CCIP stakeholders to provide succinct and informed opinions and suggestions on all communications interoperability issues to the F/P/T Interoperability Working Group. As required, this group will solicit advice from outside centres of expertise to ensure the most comprehensive and applicable information on communications interoperability is brought to the attention of all stakeholders.

CANUS Interoperability Working Group

The CANUS Interoperability Working Group will be co-chaired by a representative from Public Safety Canada and the United States Department of Homeland Security's Office of Emergency Communications. Members of this Working Group will be drawn from Canadian Federal, Provincial, and Territorial organizations and their American counterparts as required. The Working Group will be established with the goal of supporting each country's national interoperability strategy and will work to resolve bilateral issues of common interest concerning cross-border communications, and information exchange.

Strategic Objectives

Over the past three years, stakeholders identified strategic objectives fundamental to developing communications interoperability at all levels, and among all stakeholders, both within Canada and with international partners. These strategic objectives must be integrated in an ongoing fashion in order for the Canadian communications interoperability community to achieve long-term resilient and sustainable capability, to leverage existing resources, and to develop new plans, programs, and initiatives. The Strategy sets in place the conditions that will enhance interoperability when required. In this context the Strategy supports day-to-day operations, the execution of planned events, the response to local regional, national and international emergencies, and the components of the Interoperability Continuum.

The objectives of this Strategy are to be interpreted as comprehensive and balanced across all five components of the Canadian Communications Interoperability Continuum *(see Appendix 1)*.

Emergency communications is defined as the ability of emergency responders to exchange information via data, voice, and video as authorized, to complete their missions. Emergency response agencies, at all levels of government, must have:

1. Seamless interoperable communications to manage emergency response and promote day-to-day operations;
2. Command and control established; and
3. The ability to maintain situational awareness and function within a common operating framework for a broad scale of incidents.

The optimal future state for Communications Interoperability must include a high degree of leadership, planning, and collaboration among all stakeholders with a commitment to, and an investment in, the sustainability of systems and documentation.

The Strategic Objectives are:

1. Governance

Establish a governance structure and coordination framework that respects jurisdictional authorities and is empowered, resourced, representative, and accountable.

Recognizing that each community has specific needs and priorities, and few have the financial resources and the awareness of interoperability issues to coordinate effectively with other communities, provincial organizations, and with the appropriate federal programs. A framework outlining where decisions are made will provide an awareness of jurisdictional responsibility.

2. Standard Operating Procedures

Promote the development of integrated Standard Operating Procedures.

Currently, there is no nationwide system to develop, promote, or evaluate Standard Operating Procedures. Technology provides only a part of the interoperability solution. Organizations establish interoperability through the use of Standard Operating Procedures that are applied by, and are familiar to, all responders. Procedures must be jointly developed and evaluated.

3. Technology

Promote and support the development of a national public safety communications systems based on common user requirements and open standards and a system of systems approach.

Promote the adoption of open data exchange standards and support public safety agencies in the adoption of these standards.

Testing and evaluation of emergency communications technology is currently only done on an ad hoc basis. A capability-based planning approach is required with results to be available centrally for all potential users.

4. Training and Exercises

Enable and support comprehensive and integrated training and exercises.

In order for interoperability to be effective, the usage of the equipment and familiarity of procedures is achieved through regular training and exercises. This will help establish and maintain competency and familiarity between and across jurisdictions.

5. Usage

Promote development and daily use of common processes , principles and tools by all emergency personnel.

In order to maximize the advantages of interoperable systems, broad cross-jurisdictional coordination in technology investment and procurement planning is required.

Implementation

This Strategy is designed to provide a framework for the use of jurisdictions within Canada at any level to assist in identifying and strengthening communications interoperability capabilities.

The policy framework outlined within this Strategy may be enlarged upon by all levels of government. The implementation of the Strategy is achieved through the attached Action Plan that documents specific responsibilities and the basis for resource allocation by respective organizations. The Action Plan is based on the five strategic objectives identified in this Strategy. These objectives are core to developing action items and timelines for communications interoperability activities over a three-year period.

To be effective, the Strategy must be backed by appropriate commitment and adequate plans, developed by all levels of government and by all jurisdictions, and tested through regular exercises. The success of the Strategy will be measured by the deliverables and timelines described in the Action Plan.

An ongoing and coordinated inter-agency communications plan will convey achievement on the Strategy, enhancing awareness and bolstering public confidence with respect to communications interoperability threats and risks.

In addition to the action items associated with this Strategy, jurisdictions are responsible for the development of their own communications interoperability plans that support their specific or unique needs, in a manner consistent with the Strategy.

Review

Governments will work together to monitor the implementation of the Strategy and support the assessment of programs and activities against the interoperability continuum. It is expected that the collaborative approach established in the Strategy will remain current and strengthen coherency of action among all levels of government and contributors.

The success of the Strategy will be measured by deliverables and timelines provided in the Strategy's Action Plan. The Strategy will be considered successful when the performance indicators set out in the Action Plan are met. Going forward, future investment in communications interoperability in Canada should support the objectives of the Strategy and promote further the items identified in the Action Plan.

The Strategy will be reviewed and revised, in consultation with key stakeholders, every three years, or more frequently, if necessary. The Action Plan attached to this strategy will be reviewed and updated at least annually and approved by SOREM. The Interoperability Working Group will report to SOREM annually, or more frequently if necessary, on the progress in implementing the Action Plan and will make recommendations for amendments.

Acronyms

CACP ....Canadian Association of Chiefs of Police

CAFC ....Canadian Association of Fire Chiefs

CCEMO ....Canadian Council of Emergency Management Organization

CCIP ....Canadian Communications Interoperability Plan

CITIG ....Canadian Interoperability Technology Interest Group

CPRC ....Canadian Police Research Centre

CSS.......................Centre for Security Sciences

DHS ....Department of Homeland Security

EMSCC ....Emergency Medical Services Chiefs of Canada

F/P/T/....................Federal, Provincial, Territorial

NIEM .... National Information Exchange Model

OEC ....Office of Emergency Communications

PSC.......................Public Safety Canada

SCONSAD ....Senate Committee on National Security and Defence

SOREM.................Senior Officials Responsible for Emergency Management

Annex 1: Canadian Communications Interoperability Continuum

Canadian Communications Interoperability Continuum

Limited leadership, planning and collaboration among areas with minimal investment in the sustainability of systems and documentation

High degree of leadership, planning and collaboration among areas with commitment to and investment in the sustainability of systems and documentation

Governance

| Agencies Working Independantly | Informal Coordination among Emergency Management agencies | Key multi-discipline staff collaborating on a regular basis | National/Regional Working Group on Communications Interoperability |

Standard Operating Procedures

| Operational SOPs for local agencies | Common SOPs for planned events | Common SOPs for emergencies | Regional SOPs for emergencies | Integrated SOPs up to the National Level |

Technology

| DATA | Swap Files | Common applications | Custom-interfaced applications | One-way standards based sharing | Two-way standards based sharing |
| VOICE | Swap Radio | Gateway | Shared channels | Proprietary shared system | Standards based shared system |

Training & Exercises

| General orientation for equipment and applications | Single agency exercises for field and support staff | Multi-agency exercises for key field and support staff | National/Provincial training and exercises as part of national strategy |

Usage

| Planned local events | Local emergency incidents | Regional incident management | Daily use throughout regions |