CANADIAN INTEROPERABILITY TECHNOLOGY INTEREST GROUP
GROUPE D'INTÉRÊT CANADIEN EN TECHNOLOGIE DE L'INTEROPÉRABILITÉ

Response To

Elliot Lake Commission of Inquiry

Policy Roundtable – Part II

November 18th, 2013

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Executive Summary

The Canadian Interoperability Technology Interest Group (CITIG) has a long history of working collaboratively with a wide range of search and rescue (SAR) teams across Canada, including the Canada Task Force Teams. Communications interoperability has been identified by all of these communities as both a priority and challenge. Many of CITIG's almost 1,700 associates come from SAR communities across Canada.

In addition, having spearheaded the creation of the Communications Interoperability Strategy for Canada, CITIG believes, and regularly provides free training to responders and emergency management officials, in the need for interoperability strategic planning at the provincial, regional and local levels. The Province of Ontario Interoperability Task Group, or POINT, has already developed a DRAFT Provincial Interoperability Strategic Plan. This plan needs to be widely discussed and efforts made to take it from a DRAFT to an APPROVED and IMPLEMENTED state.

When it comes to technology innovation, CITIG has led the way in Canada by leading, supporting or encouraging a wide range of technology innovation and capacity building. These innovations and new capabilities include: Enhanced voice interoperability via P25 radios; 700 MHz broadband for mission critical public safety data; Next Generation 9-1-1, Unmanned Aerial Vehicles; 3D indoor location and tracking; Location Based Services; Blue Force Tracking and Precision Information Environments.

Finally, in hosting a wide range of national, regional and cross border communications interoperability workshops from coast to coast to coast in Canada, numerous spectrum management and frequency challenges have been identified. Just a few of these include: air to ground communications; cross border frequency barriers and a lack of common national frequencies.

All of these challenges, and many more, are often lacking in many search and rescue efforts. CITIG is committed to working with all Canadian SAR partners to help them fulfill their critical and challenging missions. As such, the following submission details four main recommendations:

- That the Province of Ontario Interoperability Task Group to complete its work on the Ontario Interoperability Strategic Plan and work with all stakeholders to approve and implement this plan;
- That the Government of Ontario commit financial, policy, and other human resources within the Ministry of Community Safety and Correctional Services and in partnership with POINT to provide the vision and leadership required to achieve communications interoperability amongst public safety agencies across Ontario;
- That CITIG, in partnership with a wide range of stakeholders, conduct a review of interoperable communications with a view to developing a common vision for next generation communications (voice and data) technology for use by the SAR community; and,

- Working closely with Industry Canada and other interested stakeholders, that research SAR related spectrum and frequency management issues with a view to identifying potential improvements and a national public safety band plan.

For further information, please contact Inspector (Ret.) Lance Valcour, O.O.M., Executive Director, CITIG, at Lance.valcour@citig.ca.

Introduction to CITIG

In 2007, the Canadian Interoperability Technology Interest Group (CITIG) was created to improve Canadian public safety communications interoperability. At the time, CITIG was a responder-driven, federally-funded activity that brought together responders, academia, industry and government stakeholders who shared a common interest in enhancing Canada's communications interoperability and are dedicated to improving the safety and security of first responders, and the people and critical infrastructure of Canada.

As of 2012, CITIG is now a Federally Incorporated Not-for-Profit Corporation governed in partnership by the Canadian Association of Chiefs of Police (CACP), the Canadian Association of Fire Chiefs (CAFC) and Paramedic Chiefs of Canada (PCC).

Today, CITIG is made up of almost than 1,700 volunteer associates from the responder community, all orders of government, non-governmental organizations, associations, academia and industry. CITIG is guided by the following statements:

Vision:	CITIG is recognized as a unified and authoritative voice and catalyst for public safety interoperability in Canada and internationally.
Mission:	To improve Canadian public safety interoperability at home and abroad through collaborative efforts, innovation and leadership.

Search and Rescue in Canada

Search and Rescue (SAR) in Canada is as different as the various types of SAR teams in operation. Ground SAR, Air to Ground SAR, Marine SAR, Alpine SAR, Heavy/Medium/Light Urban SAR, etc. all have unique interoperability challenges. This is not exclusive to the SAR community and has been well documented by CITIG, governments across Canada and internationally. The 9/11 Commission Report is possibly the best known example of such documentation, but examples abound across Canada.

All of these programs face challenges that may include remote operating areas, funding, lack of interoperability, lack of technological innovation and, often, a lack of interoperability (functional, planning and voice/data communications).

When faced with a similar situation regarding public safety interoperability in Canada in 2008, CITIG led a national effort to create the Communications Interoperability Strategy for Canada, or CISC. The CISC (see http://www.publicsafety.gc.ca/prg/em/cisc-eng.aspx) was initially recommended by delegates to the First Canadian Public Safety Interoperability Workshop, hosted by CITIG in Ottawa in 2008. CITIG worked with various Federal, Provincial, Territorial, Municipal (F/P/T/M) and related stakeholders, including Non-Governmental Organizations (volunteers) to develop the CISC and then, over the following two years, ensure that it was approved by the Ministers responsible for Emergency Management at a ceremony in Toronto in January 2011.

The CISC is actualized by a series of "Action Plans" including:

- 700 MHz Broadband for Mission Critical Public Safety Data;
- Multi-Agency Situation Awareness System;
- Social Media for Emergency Management;
- Northern and Arctic Interoperability;
- Public Alerting; and,
- Canada – US Cross Border.

Many SAR teams across Canada are already involved in supporting a number of these action plans, as are CITIG and the Tri-Service Chiefs of Police, Fire and Paramedics. In many Provinces and Territories, SAR is led and/or managed by their Emergency Management Office. In some provinces, like Ontario, ground SAR is mandated to the police service of jurisdiction. In others, it is led by robust volunteer organizations, as it is in British Columbia.

Similar to SAR, the primary governance of the CISC falls to F/P/T partners through the Senior Officials Responsible for Emergency Management (SOREM) (see Appendix A). However, in recognition of the fact that the Tri-Service Chiefs and CITIG play a unique role in emergency response and emergency management, their roles have been ensconced in CISC governance (see bottom right of the chart).

Of note, the CISC is aligned with something called the Communications Interoperability Continuum. This Continuum, adopted from the U.S. model to fit Canadian needs, showcases the fact that communications interoperability is not just about technology. In fact, CITIG has learned, and now trains, on the principle that in order to improve communications interoperability responders need to work towards improvement in all five lanes of the continuum: Governance; Standard Operating Procedures; Technology (both voice and data); Training & Exercises and Usage (plain language, leveraging interoperable communications on a daily basis, etc.). For more about the Communications Interoperability Continuum see Appendix B.

> *Ultimately, technology is not the answer and is not even the problem. The critical success factor for future emergency management in Victoria, and the security of our communities, will be the extent to which the emergency services agencies align and work together to provide a single cohesive emergency management capability.*
>
> Page 6, INTEROPERABILITYBLUEPRINT, Fire Commissioner of Victoria

In addition, while the CISC is coordinated by the Interoperability Development Office at Public Safety Canada, SOREM works with a wide range of partners including Tri-Service Chiefs, CITIG, Federation of Canadian Municipalities (FCM) and many others to further the various Action Plans. Each Action Plan has unique "Subject Matter Experts" involved (i.e., technical working groups) but they all report to the SOREM Interoperability Working Group (who report to SOREM, to Deputy Ministers and, ultimately the Ministers responsible for Emergency Management).

The Province of Ontario is very active in this Working Group. As such, it works collaboratively with national level stakeholders on furthering the CISC.

Province of Ontario Interoperability Strategic Plan

The Province of Ontario, led by Emergency Management Ontario, part of the Ministry of Community Safety and Correctional Service and in partnership with a wide range of stakeholders, including the Ontario Associations of Chiefs of Fire, Paramedics, Police have been working on the development of a DRAFT Interoperability Strategy for Ontario.

In 2010, then Minister of Community Safety and Correctional Services, James Bradley, announced the creation of the Province of Ontario Interoperability Task Group, or POINT, at the Ontario Emergency Management Conference hosted by the Red Cross in Niagara on the Lake.

A few months prior to this announcement, the Ontario Association of Fire Chiefs, the Ontario Association of Chiefs of Police, and the Ontario Association of Paramedic Chiefs created the Ontario Tri-Service Interoperability Committee. This Committee, supported heavily by CITIG, is designed to do in Ontario what CITIG does nationally – work to improve public safety interoperability.

POINT has developed this DRAFT Interoperability Strategy for Ontario but it now needs to move it from "draft" to "approved." This will require support from the Province, Tri-Service Chiefs and a wide range of stakeholders. Currently it is silent on issues around SAR. CITIG recommends that this Strategy be the focal point of improving communications interoperability for an all hazards approach, including all forms of SAR.

RECOMMENDATION #1: That the Province of Ontario Interoperability Task Group complete its work on the Ontario Interoperability Strategic Plan and work with all stakeholders to approve and implement this plan.

Related to this recommendation is:

RECOMMENDATION #2: That the Government of Ontario commits financial, policy, and other human resources within the Ministry of Community Safety and Correctional Services and in partnership with POINT provide the vision and leadership required to achieve communications interoperability amongst public safety agencies across Ontario.

Moreover, if we can only seek to find ways to communicate in a major disaster, it will not work nearly as effectively as if we can communicate and share information on a daily basis. Currently in Ontario, only communities that have a shared or interoperable radio system can communicate between the tri-services and other emergency management officials, including responders such as city works or utilities. In fact, the Government of Ontario radio system is currently not interoperable with the vast majority of fire fighters. Additionally, despite being on the same Government of Ontario radio system, police and paramedics cannot talk to each other. This is not because of a technical limitation, but due to policy decisions by the various Ministries.

Earlier this year, the Ontario Tri-Service Interoperability Committee spearheaded the creation and eventual adoption of a "Joint Interoperability Resolution." That Resolution

(see Appendix C for a copy of the OACP resolution) in part called on the Ministry of Health to "…conduct an immediate review of its policy prohibiting member services of the Ontario Association of Paramedic Chiefs from communicating via their current and future communications systems with local public safety emergency responders with a view to ensuring that all responders can communicate "as required and as authorized."

Technological Innovation and Capacity Building

When it comes to technology innovation, CITIG has led the way in Canada by leading, supporting or encouraging a wide range of technology innovation and capacity building. These innovations and new capabilities include:

- Enhance voice interoperability via P25 radios;
- 700 MHz broadband for mission critical public safety data;
- Next Generation 9-1-1;
- 3D indoor location and tracking;
- Unmanned Aerial Vehicles;
- Location Based Services;
- Blue Force Tracking; and,
- Precision Information Environments.

While the inquiry submissions deadline does not allow for a lengthy analysis of each of these technologies, suffice it to say that each of them are, or about to, playing an ever increasing role in emergency response around the world.

For example, let's explore for a moment how GSAR teams will soon be able to tie 700 MHz broadband to Blue Force Tracking and Precision Information Environments. In our simulated scenario, an entire team of 80 GSAR team members are actively searching for a missing woman, believed to have been abducted.

Despite the fact that there is no cellular coverage in the remote search area, 700 MHz "in a box" has been deployed by the Search Master. This allows the Team members to leverage the IP based technology they already use (future tense) in their urban and suburban searches (Blackberries, tablets, etc.). While reporting back to Headquarters (possibly thousands of miles away) will be limited to relatively slow satellite speeds, everyone "inside the bubble" will have 20 MHz of broadband wireless capability at their fingertips."

At the same time, the Hasty Teams are being supported by a small Unmanned Aerial Vehicle (UAV) with Forward Looking Infrared and motion sensor technologies. It will quickly map the search area and identify potential investigative leads for the Search Master to leverage in the next rotation.

Meanwhile, the Blue Force Tracking data is being fed, real time, into the Precision Information Environment (think GIS on steroids). Overlays of data from the Blue Force Tracking of search team members immediately (not at the end of the search when they "upload" their "tracks" as done in the past) identifies the fact that there is an area 100 metres by 100 metres in the middle of the search area that has apparently been missed. A

quick communications check with the Hasty Team leaders, verified by the UAV, allows the Search Master to realize that this unsearched area is a small pond – and he then creates a tasking back to HQ for a dive team to be assembled and brought to the search area. Every technology described here is currently available – just not in use in most jurisdictions.

One issue, as always, is the cost of these technologies. Well, what if they were seen as "provincial" or even "national" tools (i.e., like the radios that were purchased for the G8 in Alberta some years ago – they were subsequently turned into a National Radio Cache) that could be available on a moment's notice. This is where national level coordination (not necessarily governance) becomes critical.

CITIG has partnered with a wide range of world class research labs, universities and private sector innovators to ensure that these, and other new capabilities that are just around the corner, will be showcased every year at our series of Canadian Public Safety Interoperability Workshops. The Seventh in this series will be held in Vancouver in November. One of the 13 separate 75 minute break-out will be used to explore SAR related issues. A second is exploring the possibility of developing a National Public Safety Spectrum Plan (see more on this below).

> *The true currency of emergency management is, and has always been, information: having more or better physical assets (e.g., trucks) can improve the effectiveness of an emergency response, but only when paired with good information and an effective decision-making process. By contrast, good information and decision making can already be enough for an effective emergency response, especially where it concerns the key goal of preserving human life.*
>
> Page 10, Review of the 2010 – 2011 Flood Warnings and Response Final Report

Recommendation #3: CITIG and other interested stakeholders, conduct a review of interoperable communications with a view to developing a common vision for next generation communications (voice and data) technology for use by the SAR community.

Spectrum and Frequency Management

Mission critical voice communications has been severely hampered in Canada, and most other international jurisdictions, due to a lack of coordinated spectrum and frequency management issues. Industry Canada has the lead role on these issues and has done the best they can under difficult circumstances. Most of the frequencies in the 100 MHz and 400 MHz ranges, where many police and public safety agencies operated historically, were deployed decades ago when there were still lots of additional frequencies available.

Over time and with the ever increasing demand for spectrum, there was no conscious effort to develop a national public safety band plan to "set aside" frequencies just for public safety, including SAR, use. This issue, now identified, did improve with 800 MHz and, most recently with the deployment of 700 MHz narrowband (not broadband for data) land mobile radio.

However, there continues to be a wide range of spectrum and frequency management issues. They include:

- Air-to-ground communications;
- Cross-border frequency barriers; and
- a lack of common national frequencies.

For example, air-to-ground communications creates unique challenges for land mobile radio (LMR) systems. As the airframe moves higher, the "line of site" nature of LMR causes communications to "light up" radio towers further and further away. This causes major headaches for LMR Systems.

Recommendation #4: CITIG, working closely with Industry Canada and other interested stakeholders, research SAR related spectrum and frequency management issues with a view to identifying potential improvements.

Conclusion

Very few public safety activities have such a resounding impact on the communities we serve than a search for a loved one. Anything we can do to improve the development of enhanced capacity and capability of the Canadian SAR community is time well spent!

Contact

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APPENDIX "A" – Communications Interoperability Strategy for Canada Governance Chart

Figure 1: Interoperability Governance

F/P/T Ministers

F/P/T Deputy Ministers

PS | SOREM

ADM EMC | DG EMP Working Group | SOREM Response Working Group

CANUS Interoperability Working Group | F/P/T Interoperability Working Group | CITIG & Associations

Jurisdictional Specific Working Groups
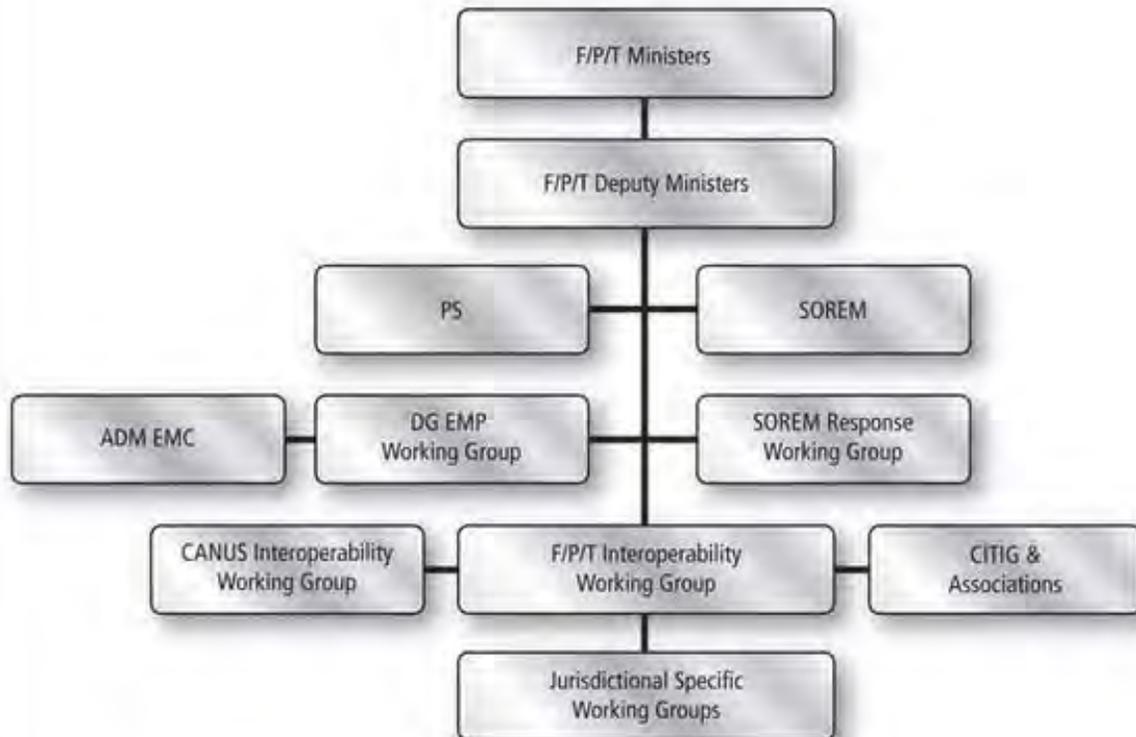
APPENDIX "B" – The Interoperability Continuum

The Interoperability Continuum demonstrates that implementing major interoperability projects is not just a technology issue, as is sometimes assumed. Rather there are five distinct levels that all contribute to the success of the project.

Canadian Communications Interoperability Continuum

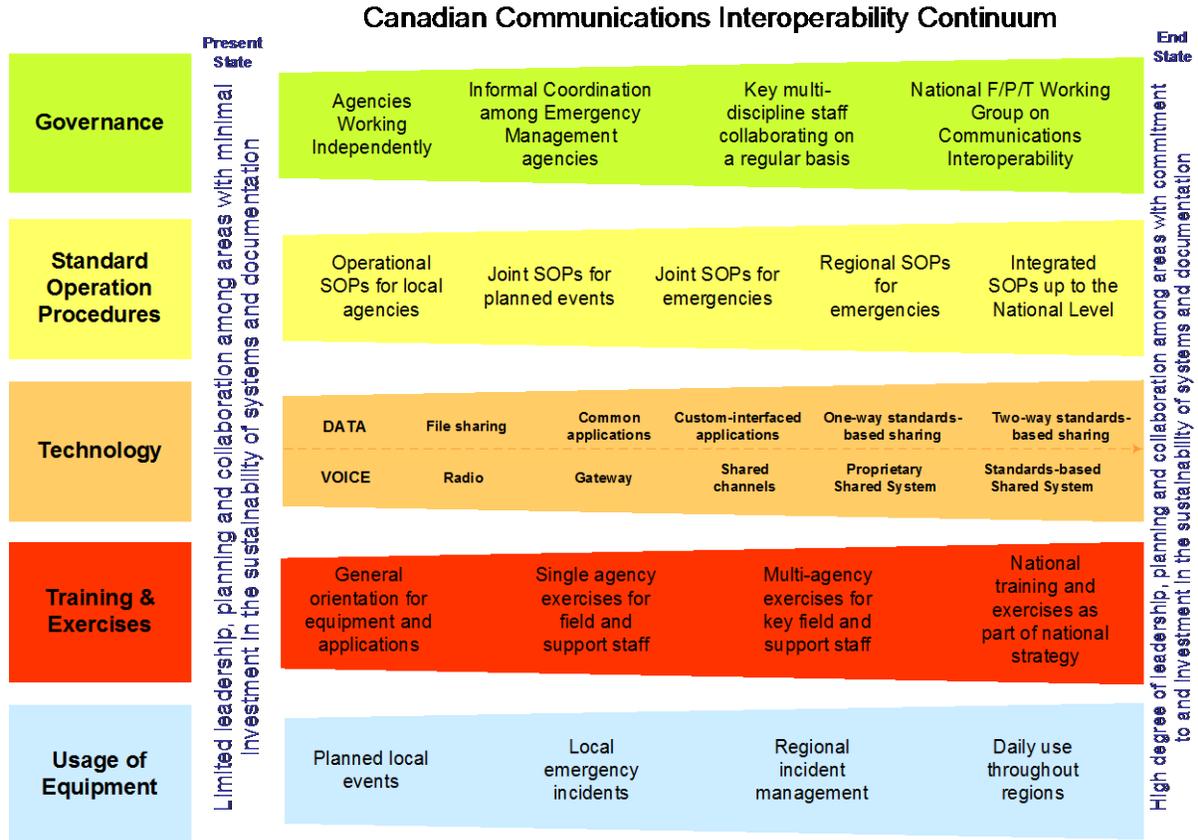|	Present State					End State
Governance		Agencies Working Independently	Informal Coordination among Emergency Management agencies	Key multi-discipline staff collaborating on a regular basis	National F/P/T Working Group on Communications Interoperability	
Standard Operation Procedures		Operational SOPs for local agencies	Joint SOPs for planned events	Joint SOPs for emergencies	Regional SOPs for emergencies	Integrated SOPs up to the National Level
Technology		DATA — File sharing	Common applications	Custom-interfaced applications	One-way standards-based sharing	Two-way standards-based sharing
		VOICE — 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 training and exercises as part of national strategy
Usage of Equipment		Planned local events	Local emergency incidents	Regional incident management		Daily use throughout regions

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

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

APPENDIX "B" – OACP Resolution

<u>Resolution 2013-03</u>

Title: Ontario Tri-Service Public Safety Communications Interoperability

Preamble:
This resolution calls for the Public Safety Communications Interoperability to be named as a priority for Province of Ontario and Tri-Service Chiefs Associations.

WHEREAS the Ontario Association of Fire Chiefs the Ontario Association of Chiefs of Police, and Ontario Association of Paramedic Chiefs have passed or are in the process of passing a resolution similar to this, and

WHEREAS the safety, security and prosperity of Ontarians including firefighters, police officers, paramedics, and other emergency service providers depends upon effective communications between public safety agencies, and

WHEREAS a coordinated provincial partnership amongst all levels of government should be based on all five lanes of the Canadian Communications Interoperability Continuum (governance, standard operating procedures, technology, training and exercises, and usage), and

WHEREAS international studies and Canadian public safety responder experience show that the lack of adequate public safety communications interoperability negatively impacts emergency response and increases the associated casualties, severity of injuries, number of lives lost, and economic impact of emergency incidents, and

WHEREAS the Canadian Association of Fire Chiefs, the Canadian Association of Chiefs of Police, and the Paramedic Chiefs of Canada joined in issuing a joint resolution in 2008 on the issue of public safety communications interoperability calling upon the Government of Canada to take action to improve public safety communications interoperability, and

WHEREAS this joint Tri-Service resolution led to the creation of the Communications Interoperability Strategy for Canada, signed in Toronto in January 2011 by the Government of Canada and all Provinces & Territories and supported by the National Tri-Service Chiefs Associations, and

WHEREAS the Canadian Association of Fire Chiefs, the Canadian Association of Chiefs of Police, and the Paramedic Chiefs of Canada have consolidated efforts to improve communications interoperability by creating the Canadian Interoperability Technology Interest Group (CITIG) as a Federally Incorporated Not-for-Profit Corporation supporting over 100,000 public safety personnel as the "One Vision – One Voice" of public safety agencies, and

WHEREAS numerous reports, studies and both National and regional workshops held in Ontario over the past five years have recommended that the Government of Ontario provide Provincial vision, leadership and funding to improve public safety communications interoperability, and

WHEREAS the Ontario Association of Fire Chiefs, the Ontario Association of Chiefs of Police, and the Ontario Association of Paramedic Chiefs created the Ontario Tri-Service Interoperability Committee in 2010 as a joint interoperability committee that is committed to cooperatively

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addressing the challenge of public safety communications interoperability in accordance with the Canadian Communications Interoperability Continuum, and

WHEREAS the Government of Ontario launched the Province of Ontario Interoperability Task Group (POINT) in 2010.

THEREFORE BE IT RESOLVED that the Ontario Association of Chiefs of Police calls on the Government of Ontario to recognize the Ontario Tri-Service Interoperability Committee as our lead group to support and improve public safety communications interoperability in Ontario.

BE IT FURTHER RESOLVED that the Ontario Association of Chiefs of Police calls on the Government of Ontario to designate the Ministry of Community Safety and Correctional Services as the lead agency, in partnership with the Ontario Tri-Service Interoperability Committee and other key stakeholders in developing and supporting a whole of government Ontario Public Safety Communications Interoperability Strategy.

BE IT FURTHER RESOLVED that the Ontario Association of Chiefs of Police calls on the Government of Ontario to commit financial, policy, and other human resources within the Ministry of Community Safety and Correctional Services and in partnership with the Ontario Tri-Service Interoperability Committee to provide the vision and leadership required to achieve communications interoperability amongst public safety agencies across Ontario.

BE IT FURTHER RESOLVED that the Ontario Association of Chiefs of Police calls on the Ministry of Health to conduct an immediate review of its policy prohibiting member services of the Ontario Association of Paramedic Chiefs from communicating via their current and future communications systems with local public safety emergency responders with a view to ensuring that all responders can communicate "as required and as authorized."

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