Functional and Technical Requirements Definition

Wireless Public Alerting Service (WPAS) Development Project

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Defence Research and Development Canada
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IMPORTANT INFORMATIVE STATEMENTS

Wireless Public Alerting Service (WPAS) Development and Demonstration Initiative, CSSP-2014-CP-2006, supported by the Canadian Safety and Security Program which is led by Defence Research and Development Canada's Centre for Security Science, in partnership with Public Safety Canada. The project was led by Industry Canada in partnership with Public Safety Canada, Mobility & Wireless Solutions, Jan Skora Consulting, Ontario Power Generation, Wireless Network Strategies, Bell Mobility (Bell Canada), Pelmorex Communications Inc., Public Alerting Ontario Emergency Management Office, Operations Office of the Fire Marshal and Emergency Management (OFMEM), and Alactel-Lucent.

Canadian Safety and Security Program is a federally-funded program to strengthen Canada's ability to anticipate, prevent/mitigate, prepare for, respond to, and recover from natural disasters, serious accidents, crime and terrorism through the convergence of science and technology with policy, operations and intelligence.

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Wireless Public Alerting Service (WPAS) Functional and Technical Requirements Definition

Wireless Public Alerting Service (WPAS) Development Project

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REVISION NOTICE PAGE

Version	Date	Description of Revision
1.0	July 31 2014	Final Draft
1.1	July 31 2014	Final Draft – Removal of Business/Policy Section
1.2	July 31 2014	Final Draft – Inclusion of Comments to July 31 2014
1.3	Aug 15 2014	Final Draft – Inclusion of Comments to Aug 12 2014
1.4	Aug 18 2014	Final Document
1.5	Sept 16 2014	Slight Modification to remove "and delivered audibly" in RD# 66 per CISC NTWG Discussion and approval from Wendy Wu and Glen Weimer.
1.6	Jan 15 2015	Updated Version reflecting collective review and feedback from Canada's 3 National Wireless Service Providers.
1.7	April 14 2015	Removed the MWSI Branding, Updated the Diagrams, to current revision, Updated Terminology/Glossary for consistency with other WPAS Documentation, Insertion of Additional References and Footnotes, Update Formatting.
1.8	April 25 2015	Additional Typo, Terminology and Grammatical Corrections as recommended by Public Safety Canada
1.9	May 5 2015	Additional Terminology corrections based upon the updated Glossary, feedback from WPAS Steering Committee April 29 and detailed comments from Wendy Wu of Industry Canada.
2.0	May 15 2015	Final Revision with correction to RD#14 per comments from Industry Canada.
Windows Name: 2015-04-14WPAS Requirements Definition - Deliverable 1.9		
File Location: https://partners.drdc-rddc.gc.ca/css/Portfolios/EMSI/WPAS/default.aspx?RootFolder=%2fcss%2fPortfolios%2fEMSI%2fWPAS%2fShared%20Documents%2fDeliverables%20%28reports%20etc%29&FolderCTID=&View=%7bE1D59A81-BF55-4D32-9FE4-077795BDB8A4%7d		

INTRODUCTION

The Goal of the Wireless Public Alerting Service (WPAS) Project is to Define, Design, Build, Test and Operate an effective Level I (Cell Broadcast) Service that can subsequently be scaled-out to a National Wireless Public Alerting Service. Canada's Wireless Service Providers (WSP) will be enabled and interconnected to deliver Level I (Threat-to-Life) Broadcast Immediate (BI) Alerts using Cell Broadcast Technology to Canadian Mobile Phones (the most pervasively used electronic device in history). The Pilot (Technology Demonstration) will take place in the community surrounding the Darlington and Pickering Nuclear facilities on Lake Ontario in Durham Region. The result will be a functioning end-to-end service that is comprised of the following:

1. Message Origination as provided by the Office of the Fire Marshal and Emergency Management (OFMEM) Ontario;
2. Message Aggregation & Dissemination as managed by the Pelmorex Communications Inc. National Alert Aggregation & Dissemination (NAAD) System;
3. Message Delivery (using Cell Broadcast Technology) as provided by Bell Mobility to an actual community of smartphone users and;
4. Media Awareness and Feedback Campaign as provided by Ontario Power Generation in the community surrounding the Darlington and Pickering Nuclear facilities in Durham Region.

The project will also recommend a transition strategy for a national deployment.

OBJECTIVE OF THE REQUIREMENTS DEFINITION

The purpose of the Requirements Definition phase is to create a clear target (Functional Requirement) against which the WPAS Project Team will design, build and operate a WPAS. The Requirements Definition also identifies Technical Parameters (i.e. existing standards) and High Level Technical Requirements. Business and Policy Gaps will also be captured in a separate document. Ideally, the Functional Requirements Definition should stand for both the Pilot and a National Deployment but it may be further refined as the project evolves and the WPAS Project Team continues to learn how to optimize the final service. Three Months was allocated to this effort.

METHODOLOGY EMPLOYED

To help reach the stated objectives, WPAS Project Delivery Management created a Steering Committee (See document 2014-06-25b WPAS Steering Committee Meeting). The Steering Committee worked together to derive the Functional Requirements through a series of weekly conference calls in May and June 2014 culminating with a face-to-face meeting held in Toronto on June 25 2014. The Steering Committee is comprised of:

a. The WPAS Project Team (the decision making body) that includes:

1. Mobility & Wireless Solutions;
2. Defence Research & Development Canada;
3. Industry Canada;
4. Public Safety Canada;
5. Bell Mobility;
6. Pelmorex Communications Inc.;
7. Ontario Power Generation and;
8. Office of the Fire Marshall and Emergency Management (OFMEM) Ontario;

b. Subject Matter Advisors that include:

1. Tim Trytten - Alberta Emergency Management Agency and Senior Officials Responsible for Emergency Management (SOREM) - Public Alerting Working Group (PAWG) and;
2. Norm Paulsen - Environment Canada

The process employed to develop these requirements leveraged the expertise within the Steering Committee members to build upon the Federal/Provincial/Territorial (FPT) EXPECTATIONS for WIRELESS PUBLIC ALERTING v. 1.0.[1] This work began by first defining a desired user experience on the handset and then working backwards through the handset into the network and finally the National Alert Aggregation & Dissemination (NAAD) System to deliver the specified user experience.

The Functional Requirements also reflect previous information/experience obtained from:

1. The National Public Alerting System (NPAS) – Common Look and Feel (CLF) Guidance; [2]
2. Wireless Emergency Alerts (WEA) Mobile Penetration Strategy (August 2013);[3]
3. Wireless Public Alerting Dissemination (WPAD) Workshop (Held in June 2013)[4]

[1] This document is available from Canadian Radio-television and Telecommunications Commission < http://www.crtc.gc.ca/public/cisc/n-docs/NTC00587.docx >

[2] This document is available from Defence Research & Development Canada (DRDC) < http://cradpdf.drdc-

[2] This document is available from Defence Research & Development Canada (DRDC) < http://cradpdf.drdc-rddc.gc.ca/PDFS/unc140/p538116_A1b.pdf >

[3] This document is available from the USA Department of Homeland Security (DHS) http://www.firstresponder.gov/TechnologyDocuments/Wireless%20Emergency%20Alerts%20Mobile%20Penetration%20Strategy.pdf

[4] Event information available from Canadian Advanced Technology Alliance http://www.cata.ca/WPAD/

4. Whitepaper – Cell Broadcast in LTE (December 2012)[5]
5. NPAS CRTC Status Report (January 2009)[6]
6. Other Domestic and International public alerting documentation.

At the Technical Level, the specifications shall be constrained to compliance with Technical Parameters including the existing ATIS and 3GPP technical standards for emergency alerting and the need for Canadian Phones to be interoperable with the American Wireless Emergency Alert (WEA) Service and for American phones to operate on the Canadian WPAS Service. The Technical Parameters are complimented by Technical Requirements which are very high level in nature so as to leave the Operating Partners (Bell Mobility and Pelmorex Communications Inc.) with the flexibility to develop technical specifications during Project Phase 2 Canadian WPAS Specification Development as facilitated by CISC-NTWG (CRTC Interconnection Steering Committee - Network Technology Working Group)and then optimize the WPAS Architecture during Project Phase 3 Network Integration, Project Phase 4 NAAD System Expansion, Project Phase 5 Lab Testing & Certification and Project Phase 7 WPAS Service Pilot.

At the Business and Policy level, the Requirements Definition largely addresses key gaps that may impede the transition to a National Wireless Alerting Service. This has resulted in a separate document (see 2014-08-15 WPAS Business & Policy Requirements Definition - Deliverable 1 .9)

This effort was coordinated, managed and documented by the WPAS Project Delivery Management who hosted all discussions and produced this official Requirements Definition document for the Wireless Public Alerting Service (WPAS) Development and Demonstration Initiative.

Note: Acknowledgements to Kirsten Wells (Pelmorex), Tony Hui (Bell Mobility), Carole Gregoris (Ontario Power Generation), Chris Pittens (Office of the Fire Marshal and Emergency Management – Ontario) Norm Paulsen (Environment Canada), Tim Trytten (Alberta Emergency Alerts), Jeff Boyczuk (Public Safety Canada), Alisa Schryer (Public Safety Canada), Sandro Hervato (Industry Canada), Wendy Wu (Industry Canada), Glen Weimer (Defence Research & Development Canada) and Philip Dawe (Defence Research & Development Canada) for their contributed input/feedback to this document.

In December 2014 and January 2015, this document was further reviewed by Canada's three National WSPs (Bell Mobility, Rogers Communications Inc. and Telus Corporation) to further refine the suitability of the WPAS Requirements for Canada's WSPs and obtain their consensus on this document.

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[5] This document is available from One2Many http://www.one2many.eu/en/cell-broadcast/system-architecture

[6] This document is available from http://www4.carleton.ca/jmc/cnews/03042009/news/pdfs/npascrtc.pdf

Note: Acknowledgements to Tony Hui (Bell Mobility), Francis Fernandes (Bell Mobility), Gerry Thompson (Rogers Communications Inc.), Pramod Aryal (Telus Corporation) and Wendy Wu (Industry Canada) for their contributed input/feedback to this updated document.

WPAS NATIONAL DEPLOYMENT CONCEPT OVERVIEW DIAGRAM

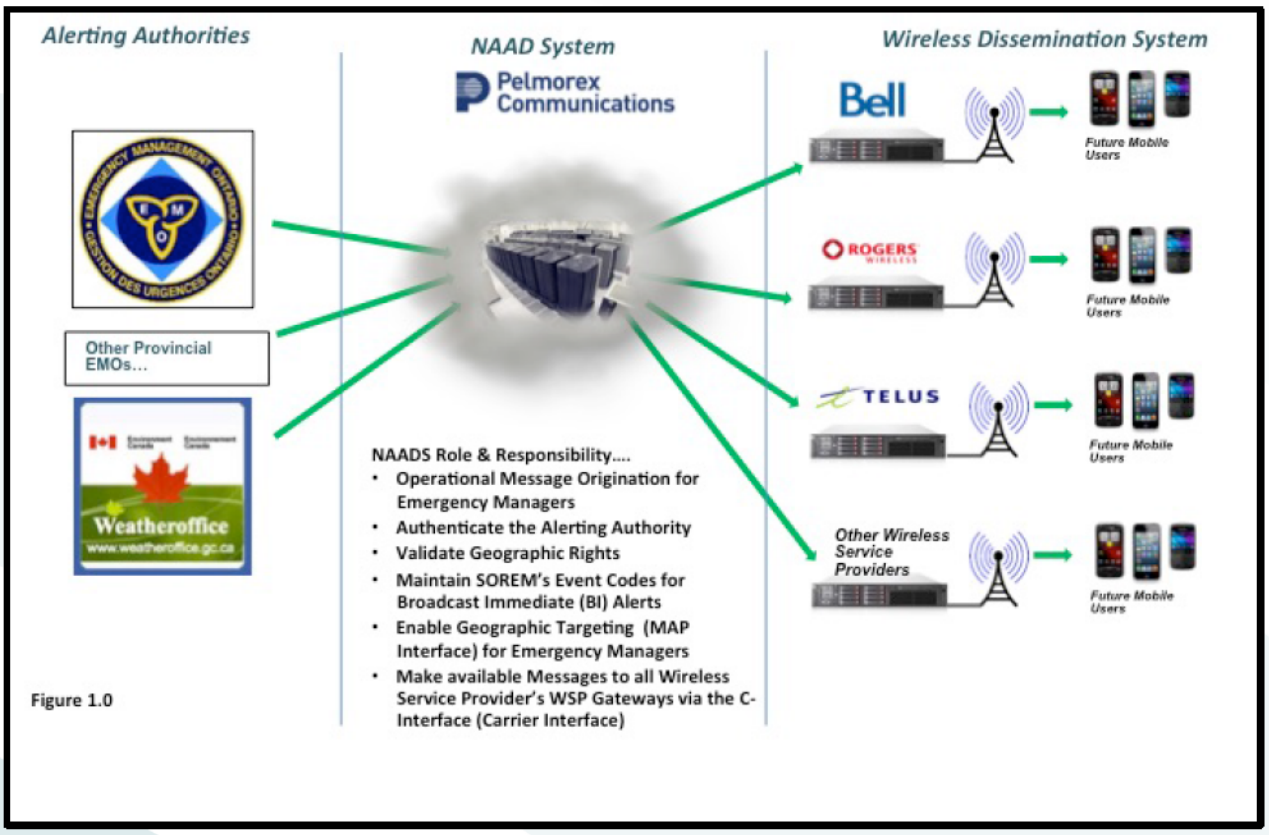

Figure 1: WPAS National Deployment Overview Diagram

WPAS PILOT OVERVIEW DIAGRAM

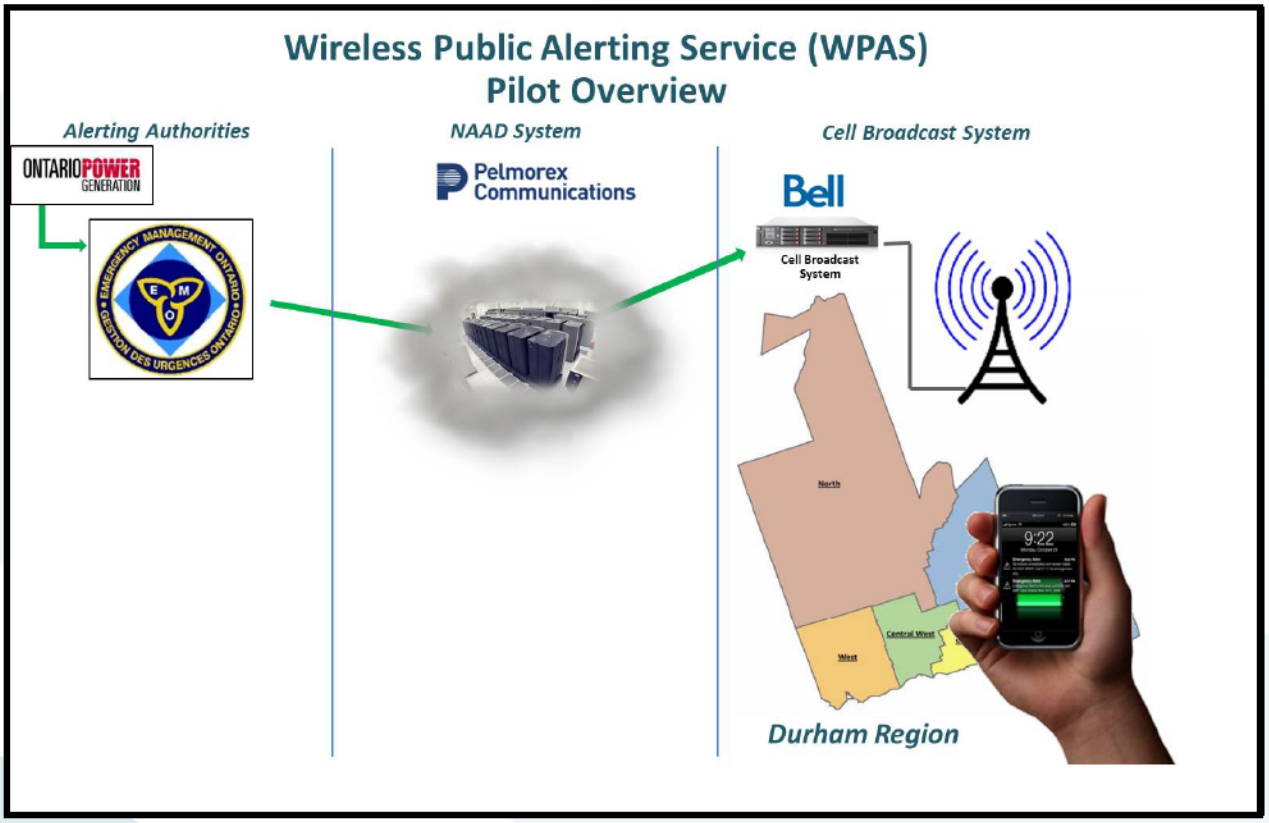

Figure 2: WPAS Pilot Overview Diagram

WPAS ARCHITECTURAL SYSTEM BLOCK DIAGRAM

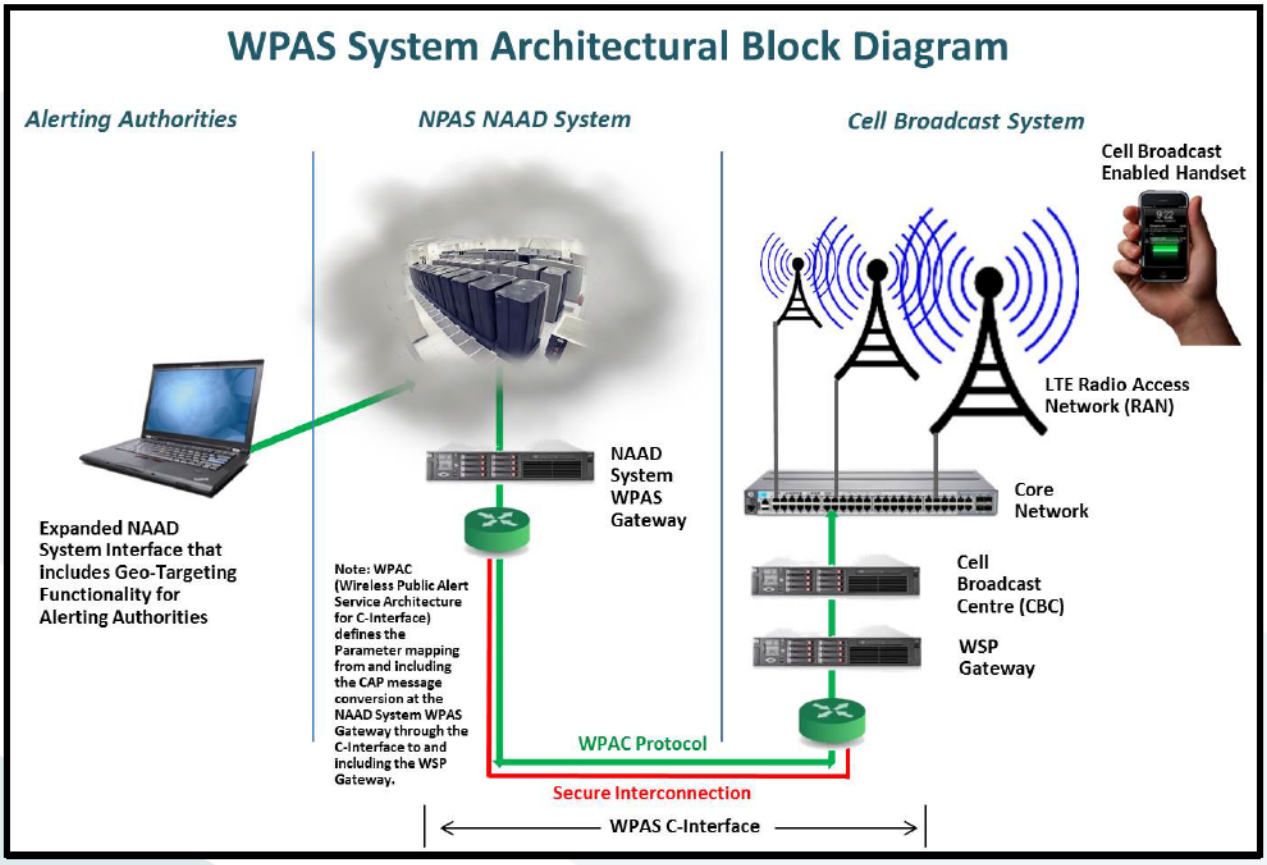

Figure 3: WPAS System Architectural Block Diagram

WPAS OPERATIONAL AND FUNCTIONAL REQUIREMENTS

Wireless Public Alerting Service (WPAS) Operational and Functional Requirements		
Category	**Item #**	**Description**
Message Content	1	The Wireless Public Alerting Service (WPAS) shall be used for the delivery of SOREM approved Broadcast Immediate (BI) alert messages only. 7
	2	Alerting Authorities are required to issue CAP-CP messages that contain a special Audience Alert Message not exceeding 90 characters per language.[8]
	3	The NAAD System will generate a bilingual Wireless Public Alert Message (WPAM) that does not exceed 90 characters in length as generated by the Alerting Authority.[8,9]
	4	The Cell Broadcast System receives an alert message via the WPAC Protocol, which contains a WPAM (Wireless Public Alert Message) parameter that contains a text message, currently constrained to not exceed 90 characters in length.[2]
	5	The WSP Cell Broadcast System does not alter or modify alert contents.[10]
	6	Alerts are in text format only for WPAS.
	7	The WSP Cell Broadcast System will be designed to process and deliver a single Broadcast Immediate Alert Message that contains English, French or English and French Audience Alert Messages with identical Geo-Targeting Information.

[7] Other uses of the Cell Broadcast Systems within the Canadian Wireless Service Providers' (WSP) networks are out of scope for this document.

[8] It may be possible to technically eliminate the 90 Character Limitation while remaining compliant with all other Functional Requirements. This will be further assessed during Project Phase 2, Canadian WPAS Specification Development and Phase 3 Network Integration/Development.

[9] Pelmorex Communications provides the electronic platform through which the Alert Authority generates CAP-CP alert messages.

[10] Character Mapping if required is excluded and shall not be considered an alteration of the alert content.

Message Content	**8**	Alerting Authorities understand that some Cell Broadcast Systems may be programmed to interpret space, carriage return, new line, etc. in the CAP free form text elements as a single space. Recognizing the number of media that a single audience alert message may be distributed through, all alert originating parties, including re-originators, should note that trying to influence the presentation in one type of medium, or one LMDs medium, may negatively impact the presentation of the alert audience message in another medium.
	9	Alerting authorities should ensure that alert audience messages with a Broadcast Immediately value of Yes have an <effective> time equal to <sent> when issuing the alert.
	10	Alerting authorities are responsible for ensuring that their alert messages are expired or cancelled.
	11	WSPs are expected to distribute and present a WPAS Alert Message a minimum of one time.
Message Source	**12**	The WSP Cell Broadcast System only receives WPAMs that have been converted from a CAP-CP Alert by the NAAD System and provided to the WSP via WPAC Protocol.
Immediate Dissemination	**13**	The WSP Cell Broadcast System disseminates WPAS messages automatically and without undue delay upon receiving alerts from an NAAD System.
Blanket Coverage	**14**	Alerts are transmitted simultaneously to all Mobile Devices including WPAS enabled Mobile Devices that are camped-on to the participating WSP's LTE network within the targeted geographic areas.
	15	By default, WPAS compatible Mobile Devices receive WPAS Alert Messages and cannot opt out.
No Adverse Impact	**16**	WPAS does not unduly affect normal telecommunications availability and responsiveness. It is anticipated that voice and data traffic may surge as the result of public reaction to a WPAS Alert Message.
System Availability	**17**	The WSP Cell Broadcast System is designed to achieve the level of availability that is expected of a critical telecommunication service delivered by a Canadian WSP.[11]

[11] Functional Requirements that are pertinent to the Design and Implementation of a National Wireless Public Alerting Service (WPAS) but are not essential for the Project Pilot have been colour coded in Grey.

Security	**18**	NAAD System only disseminates alert messages generated by authenticated government-authorized sources.
	19	The Cell Broadcast System only broadcasts alerts received from government-authorized sources and as authenticated and disseminated by the NAAD System.
	20	Alert Authorities protect the integrity of alerts by securely managing user access to the NAAD System.
	21	The NAAD System protects the integrity of alerts. The system, its components and the alerts are protected from unauthorized access and tampering. [12]
	22	The WSP Cell Broadcast System protects the integrity of alerts. The Cell Broadcast System, its components and the alerts are protected from unauthorized access and tampering.
	23	The NAAD System has measures in place to prevent false alerts. [13]
	24	The WSP Cell Broadcast System has measures in place to prevent false alerts.[14]
	25	The NAAD System supports all defined and relevant interfaces and associated security protocols established for an authorized public alerting aggregator.[15]
	26	The Cell Broadcast System supports all defined and relevant interfaces and associated security protocols established for an authorized public alerting distributor and telecommunications operator in Canada.

[12] It is understood that the NAAD System can only protect the integrity of the alert during the period of time from when the Alert Authority generates the alert to the time it is made available to the Cell Broadcast Systems.

[13] False alerts mean alert messages that have been changed from that issued by the Alert Authority.

[14] Further technical and operational detail will be provided in the forthcoming WPAS C-Interface Specification, WPAS Engineering Reference Design and WPAS Concept of Operations.

[15] The NAAD System will support relevant interfaces and associated security protocols as approved by the Pelmorex Public Alerting Governance Council.

Resilience	**27**	The Cell Broadcast System uses redundant connections to interconnect with the NAAD System. [11]
	28	The NAAD System provides resilient and redundant channels between the NAAD System and the Cell Broadcast Systems of participating WSPs. [11]
	29	The NAAD System includes a geographically redundant infrastructure that enables it to operate seamlessly should the primary infrastructure fail.
	30	The WSP Gateway and Cell Broadcast Centre (CBC) shall employ a redundant architecture to achieve the level of availability that is expected of a critical telecommunication service delivered by a Canadian WSP. [11]
Geo-Targeting	**31**	Alert Messages distributed through the NAAD System will include geographic information that defines the alert area in the form of a polygon that include latitude and longitude information. [16]
	32	The Cell Broadcast System maps the geo-targeting information contained in WPAM alert messages from The NAAD System to the associated wireless network transmission area.
	33	The NAAD System shall provide a specialized Geo Targeting map based interface that enables Alert Message Originators (Alerting Authorities) to draw custom polygons so as to direct messages to very specific locations.
	34	Alert authorities should, if possible, use the fewest number of polygons required to describe the area of the alert.
	35	Alert authorities should, if possible, use a point, circles or polygons that do not exceed 150 vertices.
	36	Any generalization of polygons associated with CAP-CP location references should include all areas of the single location, and may therefore also include areas outside of it. Further, coverage should be kept to a minimum. For clarity, alerting a slightly larger area is preferred to alerting an area less than that which the alert has been issued for.
	37	The Cell Broadcast System transmits alerts to geo-targeted areas using all necessary and available transmission sites required to provide coverage for the geo-targeted alert area indicated. For clarity, if a transmission sector covers any part of the alert area, including as little as 1%, all devices in that transmission sector area are to receive the alert.

[16] The NAAD System makes available the Geo-Targeting Information to the Cell Broadcast System as generated by the Alerting Authority.

Priority	38	Once an alert message has been generated, every party involved in the distribution of that alert should work towards advancing and presenting the audience alert messages to the public with as little delay as possible.
	39	The NAAD System forwards alerts in the order of earliest CAP-CP <sent> time to the Cell Broadcast System of participating WSPs.
	40	The WSP Cell Broadcast System delivers alerts in the order received from the NAAD System.
	41	The WSP Cell Broadcast System prioritizes alerts over other communications, i.e. puts alerts first in the queue for delivery.
	42	Cell Broadcast capable Mobile Devices prioritize receiving alerts over other communications if the devices do not display alerts while in session (i.e. simultaneous display).
	43	Cell Broadcast alerts may temporarily interrupt but do not pre-empt on-going data or voice communications.[17]
	44	The WSP should strive to present Broadcast Immediately audience alert messages within one minute of being made available by the NAAD System.
Records Management	45	The NAAD System provides records in the form of an online archive for all generated Alert Messages including WPAMs and is available to everyone at https://alerts.pelmorex.com/filearchiveaccess/.
	46	The Cell Broadcast System provides records of WPAS Alert Messages delivered to the public when requested or accessed by Alerting Authorities. Records for each alert are to be retained for a minimum of seven years and are to contain: The time of receipt from the NAAD System; time of broadcast at each cell tower; a transcript of the alert message broadcasted; the geographic dissemination area; and the number of times the message was broadcasted.[18]

[17] LTE can maintain a maximum of 11 active connections in a UE. Sessions will be pre-empted if the cell broadcast attempts to create a 12th session"

[18] Existing Policies may have to be reviewed during the 35 month timeline of the project to better accommodate the unique functionality within Cell Broadcasting Systems.

Language	**47**	Alerting authorities are to issue alert messages in at least one of Canada's two official languages, English and/or French, in accordance with their government's legislation.
	48	Whenever possible and practical, alerting authorities should include audience alert messages in both official languages.
	49	The Cell Broadcast System must be able to accept, process and deliver both English and French audience alert messages.
	50	Alerting Authorities are responsible for the choice of languages used within each alert message.
	51	The NAAD System does not translate any languages found in the messages.
	52	The WSP Cell Broadcast System does not translate any languages found in the messages.
	53	Cell Broadcast capable Mobile Devices display WPAS Alert Messages in the languages as received.
	54	Preferably, the English and French text from alerting authorities will be similarly complete. I.e. Both will include the same event reference, location references, instructions, etc. It is understood this may not be possible and practical for all alerting authorities.
	55	Alerting authorities are responsible to ensure the accuracy of messages translated from one official language to the other
	56	There are to be no Electronic Translations of WPAS Alert Messages in the NAAD System.
	57	There are to be no Electronic Translations of WPAS Alert Messages in the Cell Broadcast System.[10]
	58	If an audience alert message is present for only one of the two official languages, it should be used.
	59	When the Audience Alert Message is presented to a user, there should be a bilingual banner that reads "EMERGENCY ALERT /ALERTE D'URGENCE"
Tests	**60**	The NAAD System supports and performs system tests based on and in compliance with test policies established by authorized public alerting authorities and aggregators. [19]
	61	The WSP Cell Broadcast System supports and performs system tests based on and in compliance with test policies established by authorized public alerting authorities and aggregators.

[19] The NAAD System conducts tests based on and in compliance with the test policies approved by the Pelmorex Public Alerting Governance Council.

Roaming	62	Cell Broadcast capable Mobile Devices subscribed to a Cell Broadcast enabled wireless telecommunication service provider's network are able to receive alerts when roaming on another's network that also participates in Cell Broadcast Alerting.
	63	Cell Broadcast capable Mobile Devices sold in Canada should be compatible with USA Wireless Emergency Alerts (WEA) service.
	64	Canada's Wireless Public Alerting Service (WPAS) shall endeavour to be compatible with Cell Broadcast capable Mobile Devices from the USA when roaming in Canada.
Mobile Devices	66	Wherever possible, the Canadian Alerting Attention Signal should be used to introduce WPAS Alert Messages.
	67	Duration of Canadian Alerting Attention Signal: 8 seconds.
	68	Should the Alerting Authority wish to have the WPAS Alert Message repeated, a CAP-CP Message Update or a new CAP-CP Message will have to be issued by the Alerting Authority.
	69	Repetition: If the audience alert message is updated, the Alerting Attention Signal should precede the repeated audience alert message.
	70	Cell Broadcast capable Mobile Devices are pre-configured to receive all BI alerts.
	71	Battery life in Cell Broadcast capable mobiles devices are not to be significantly reduced by the public warning system.
	72	Cell Broadcast capable Mobile Devices automatically suppress duplicate alerts. A duplicate is a repetition of a previous alert, as determined by unique parameters.
	73	Cell Broadcast capable Mobile Devices have the ability to present previously displayed alerts if requested by the user.
	74	Cell Broadcast capable Mobile Devices are able to support concurrent reception of multiple alerts.
	75	The Canadian Alerting Attention Signal and vibration cadence must be restricted to Cell Broadcast System alerts. (i.e. it cannot be selected for use with any other form of messaging on the Mobile Device)

WPAS TECHNICAL PARAMETERS AND REQUIREMENTS

Wireless Public Alerting Service (WPAS) Technical Parameters and Requirements		
Category	**Item #**	**Description**
Technical Parameters	1	WPAS must employ and be conformant with CAP (Common Alerting Protocol) and CAP-CP (Common Alerting Protocol – Canadian Profile).
	2	WPAS must be conformant with 3GPP TS 23.041 International Standards for Cell Broadcasting and 3GPP International Standards.
	3	WPAS must employ the Warning Message Delivery function within LTE technology.
	4	WPAS Shall incorporate Design Requirement for 99.999% System Availability (Not a Pilot Requirement)[20]
	5	WPAS shall be functionally compatible with the United States' WEA (Wireless Emergency Alerts) Service per 3GPP/ATIS J-STD-100 Handset and ATIS J-STD-101 C-Interface.
	6	The Cell Broadcast System must be able to accept and process bilingual English and French WPAMs as derived and packaged by the NAAD System from separate English and French <info> blocks of a single CAP-CP Alert Message.
	7	WPAS is to be constructed using off-the-shelf Products that incorporate Industry Standard Technology.
	8	Cell Broadcast System Design shall be subject to review and consensus within the CRTC Interconnection Steering Committee (CISC) Network Technology Working Group (NTWG) where appropriate.
	9	Cell Broadcast System Design shall be subject to Canadian Telecom Interconnectivity Security Standards/Conventions.
	10	Mobile Devices sold in Canada must meet Industry Canada's Standards and Certification of Radio Apparatus and Electronic Equipment used in Canada.

[20] Technical Requirements that are pertinent to the Design and Implementation of a National Wireless Public Alerting Service (WPAS) but are not essential for the Project Pilot have been colour coded in Grey.

Technical Requirements - Canadian WPAS Handset Implementation Specification	**11**	Requirement to ascertain the economic viability of importing/distributing Mobile Handsets that are unique to the Canadian Market so as to accommodate the Canadian Alerting Attention Signal and possibly other language functions such as Alert Banners. This will be contrasted against using Cell Broadcast enabled Handsets already developed for use in the US Market. Economic comparison to be developed and revised by the WPAS Project Delivery Team, submitted to the WPAS Steering Committee for approval and then submitted for peer review and consensus within CISC-NTWG.
	12	Requirement to assess the technical need for the 90 Character Restrictions when using the Warning Message Delivery function (Cell Broadcasting) over an LTE Network. This restriction may no longer be required for compatibility with the United States' WEA (Wireless Emergency Alerts) Service. Design Specification(s) to be developed and revised by the WPAS Project Delivery Team for peer review and consensus within CISC-NTWG.
	13	Requirement to Design, Develop and Implement a technical process through which two languages (French and English) will be delivered to and presented on a Cell Broadcast enabled Handset. There is more than one possibility for achieving this. Considerations include (but are not limited to) the user acknowledgement function (J-STD-100 says that each WEA message shall be acknowledged by the user before he/she can do anything else), Language Detection methods, GSM 7 bit Alphabet, Message Identifier Channels (i.e. CMAS MI=4370), sequence/prioritization of language presentation, scrolling function, and the need for an Alert Banner per Functional Requirement # 59. Design Specification(s) to be developed and revised by the WPAS Project Delivery Team, submitted to the WPAS Steering Committee for approval and then submitted for peer review and consensus within CISC-NTWG.
	14	Requirement to assess the Technical Feasibility of retroactively enabling LTE Mobile Handsets that are already in use within the Canadian Market with Cell Broadcasting functionality.
Technical Requirements - Canadian WPAS Network Implementation Specification	**15**	Requirement to ascertain Cell Broadcast Repetition frequency to maximize the Audience Alert Message Penetration within a Geo-Targeted area. Design Specification(s) to be developed and revised by the WPAS Project Delivery Team for peer review and consensus within CISC-NTWG.
Technical Requirements - Canadian WPAS Network Implementation Specification	**16**	Requirement to Design and Develop a generic Cell Broadcast System Reference Design that can be employed by all of Canada's WSPs. Design Specification(s) to be developed and revised by the WPAS Project Delivery Team for peer review and consensus within CISC-NTWG.

	17	Requirement to Design and Implement a WPAS C-Interface to interconnect the Cell Broadcasting System with the NAAD System's WPAS Gateway. The WPAS C-Interface will map the WPAC Protocol Parameters with Parameters within TS 23.041 International Standards for Cell Broadcasting. Considerations include (but are not limited to) mapping Geo-Targeting Information to Sector Coverage Areas versus Base Station/Repeater Antenna Location. Design Specification(s) to be developed and revised by the WPAS Project Delivery Team for peer review and consensus within CISC-NTWG.
	18	Requirement to Design and Implement a High Availability and Secure Physical (or Virtual) Layer Interconnection between the WSP Gateway and the NAAD System's WPAS Gateway.
Technical Requirements - NAAD System Expansion	19	Requirement to Design, Develop and Implement a WPAS Gateway to interconnect the NAAD System with the WSP Gateway (within the Cell Broadcast System). The WPAS Gateway will convert CAP-CP Parameters into WPAC Protocol Parameters for ingestion into the WSP Gateway of the Cell Broadcast System. Considerations include (but are not limited to) CAP Compliance, Process for Alert Message Updates, Termination mechanism for BI Alerts and Geo-Targeting Process for Environment Canada.[21]
Technical Requirements - NAAD System Expansion	20	Requirement to update the Design and expand the NAAD System's Online Interface used by Alerting Authorities to incorporate Geo-Targeting functionality. The Geo-Targeting Interface would provide Alert Authorities with the ability to dynamically draw a polygon upon an electronic map that would then be translated into a set of Coordinates (Longitude and Latitude). This would then be incorporated into the information presented to the Cell Broadcast System via the WPAS Gateway of the NAAD System. Considerations include (but are not limited to) the Geo-Targeting process for Environment Canada who use a Direct Interconnection with the NAAD.

[21] The NAAD System WPAS Gateway and associated WPAC Protocol could also be used to generate messages through other Wireless Alerting Platforms such as an SMS Text Messaging System. Bell Mobility confirmed that they could employ the WPAC feed from the NAAD System to feed their SMSC (Short Message Service Controller).

GLOSSARY OF TERMS

Wireless Public Alerting Service (WPAS) Glossary of Terms		
Term or Phrase		**Definition**
Alerting Attention Signal		An audible signal used to capture attention in advance of the presentation of an audience alert message.
Alert Message		The complete CAP message, which may include multiple audience alert messages. See CAP documentation for further clarification. http://docs.oasisopen.
Audience Alert Message		A complete message within a CAP message, that may be distinct from another Audience Alert Message because of the language, alert area, severity, etc., and which is identifiable within the CAP message as a separate <info> block. It may or may not include audio and or other resources. When transcoded through the NAAD System WPAS Gateway, the Audience Alert Message provides the fundamental elements for the Wireless Public Alert Message (WPAM).
Broadcast Delay		The time between the CAP alert message being available to a last mile distributor and the audience alert message(s) being presented to the public.
Broadcast Immediately List		A collection of event types and associated CAP urgency, severity and certainty conditions, that have been identified by the Senior Officials Responsible for Emergency Management as having an imminent or expected threat to life, that alerting officials wish to be distributed and presented to the public as soon as possible, even if it means disrupting the programming of last mile distributors.
Broadcast Immediately Alert		An audience alert message that aligns with the broadcast immediately list.
Canadian Profile of the Common Alerting Protocol (CAP-CP)		A set of rules and references specific to the use of CAP in Canada. www.CAP-CP.ca

Common Alerting Protocol (CAP)		The international message protocol adopted for use in NPAS. It is an international standard managed by OASIS, the Organization for the Advancement of Structured Information Standards. http://docs.oasisopen.org/emergency/cap/
CAP Layer		A specification developed by one or more members of the alerting community that relates to the extension of CAP, in accordance with CAP, for including additional content within a CAP alert message. E.g. A "Broadcast Immediately" element value is defined in the SOREM Layer specification.
CAP Profile		A specification developed by one or more members of the alerting community that includes additional constraints and rules for CAP users, all of which must be within the bounds of the CAP standard. e.g. Canadian Profile of the Common Alerting Protocol (CAP-CP). NPAS CLF Guidance v1.0 5
Cell Broadcast Centre (CBC)		The component within a WSP's Cell Broadcast System that receives the WPAC Alert Message from the NAAD System and converts the message to a geo-targeted audience alert message on the LTE communications network and the Radio Access Network (RAN).
Cell Broadcast System		The components within a WSP's network including the appropriately configured mobile phones (handsets) that are necessary to facilitate the geo-targeted delivery of Cell Broadcast Audience Alert Messages to Mobile Devices. Sub Components include (but are not limited to) the WPAS C-Interface, WSP Gateway, Cell Broadcast Centre (CBC), the LTE communications network, the Radio Access Network (RAN) and Cell Broadcast enabled Handsets.
Common Look and Feel (CLF)		The objective of presenting clearly recognizable authoritative audience alert messages to the Canadian public through the diversity of communications media and distributors supporting the NPAS initiative.
Last Mile Distributor (LMD)		Operators of technology based service delivery systems that disseminate National Public Alerting System messages (Audience Alert Messages) to the public. LMDs include, but are not limited to, radio, television, Internet, landline or cellular telecommunication, billboard, and other forms of wireline or wireless technology service deliveries or systems. Any party that transmits standardized emergency alerts directly to the public, in

		a "made for end client" presentation, are LMDs. The LMD is responsible for delivery and presentation of the Alert Message while Alert Authorities are responsible for the message content.
Layer		See CAP Layer.
LTE (Long Term Evolution) Network		Long-Term Evolution (commonly marketed as 4G or 4G LTE) is an international standard for wireless communication of high-speed data for mobile phones and data terminals. This is the network technology being used for WPAS and is a component within the Cell Broadcast System.
Mobile Devices		Mobile phones (handsets) that connect directly to a Facility-based Wireless Service Provider's (WSP) Long Term Evolution (LTE) Network, can display a minimum of 280 Characters on an embedded screen and is approved by Canada's WSPs or Mobile Virtual Network Operator's (MVNO) for use on their networks.
National Alert Aggregation & Dissemination (NAAD) System		The CAP alert message aggregation system recognized as the national aggregator for NPAS. Owned and operated by Pelmorex Communications Inc. See http://alerts.pelmorex.com/en/.
National Public Alerting System (NPAS)		The Canadian federal/provincial/territorial government led public alerting initiative.
Pelmorex Public Alerting Governance Council		The Governance Body from which the National Alert Aggregation & Dissemination (NAAD) System receives assistance.
Profile		See CAP Profile.
Radio Access Network (RAN)		A Radio Access Network (RAN) is part of a mobile telecommunication system. Conceptually, it resides between a device such as a mobile phone, and the core network which is the LTE Network for the WPAS. It is often referred to as the Air Interface and it is a component within the Cell Broadcast System.
Senior Officials Responsible for Emergency Management (SOREM)		SOREM is a forum of Federal/Provincial/Territorial (F/P/T) officials responsible for coordinating a strategy for emergency management in Canada, and for providing guidance and advice on how to enhance emergency management in Canada. SOREM includes representatives from provincial and territorial emergency management organizations and Public Safety Canada.

SOREM Layer		A public alerting specification developed and owned by SOREM that is currently limited to identifying an audience alert message as “Broadcast Immediately”.
Wireless Emergency Alerts (WEA)		Originally called CMAS (Commercial Mobile Alert System), WEA is used in the United States of America. The technical specifications for this service are still referred to as CMAS Specifications.
Wireless Public Alert Service Architecture for C-Interface (WPAC)		The communication protocol required for the C-Interface and the reliable transmission of Wireless Public Alert Messages from the NAAD System to multiple WSPs.
Wireless Service Provider (WSP)		A WSP is any one of Canada's National or Regional Cellular Voice and Data Service Providers that operate their own network infrastructure within Canada.
WPAS C-Interface		The operational interface between and inclusive of the National Alert Aggregation and Dissemination (NAAD) System Wireless Public Alerting Service (WPAS) Gateway and Wireless Service Provider (WSP) Gateway for the purpose of issuing WPAS alerts.
Wireless Public Alert Message (WPAM)		A derivative of the original CAP–CP Audience Alert Message that has been specifically assembled by the NAAD System WPAS Gateway for transport across the WPAC for processing by the WSP Gateway. The WPAM is comprised of the XML Script that encapsulates (but is not limited to) the CAP-CP Event Code, CAP Message ID, CAP-CP Location Code(s), associated Geographic Coordinates, additional Geographic Coordinates for polygons, and a bilingual message text field. While architected to accommodate both English + French languages, the bilingual message text field may contain an English Message, a French Message, a Bilingual English + French Message or a Bilingual French + English Message. The content of the message text field (Audience Alert Message) shall be determined by the Alerting Authority when creating the CAP Alert Message whereas the composition of the WPAM text field shall be assembled by the WPAS Gateway based on a simple concatenation algorithm.
WPAS Gateway		The NAAD System Interface specifically designed to securely interconnect with the WSP Gateway within the Cell Broadcast Systems of WSPs using the WPAC Protocol.

WSP Gateway		A WSP administered system, identified by a unique IP address or Fully Qualified Domain Name, which interfaces with the NAAD System WPAS Gateway via the WPAC protocol to process and condition WPAMs for delivery of Audience Alerts via the Cell Broadcast Centre.

Note: Glossary is subject to update pending updates to the NPAS Common Look and Feel Guidance Document, updates to the SOREM-PAWG FPT Requirements for Wireless Public Alerting, updates from Pelmorex Public Alerting Governance Council and requests from the WPAS Steering Committee.