

The background of the image is a composite of a bright green aurora borealis in the sky and a dark, silhouetted landscape with water and rocks in the foreground. The aurora is a vibrant, glowing green, with some darker green and blue tones interspersed. The landscape below is dark, with silhouettes of mountains and a body of water. Several large, light-colored rocks are visible in the water, reflecting the light from the aurora. The overall scene is atmospheric and visually striking.

Asia-Pacific Broadcasting Union March 5, 2020 Kuala Lumpur, Malaysia

Emergency Alerting with Open Source Technologies

**Presented by
Rob Hopkins**



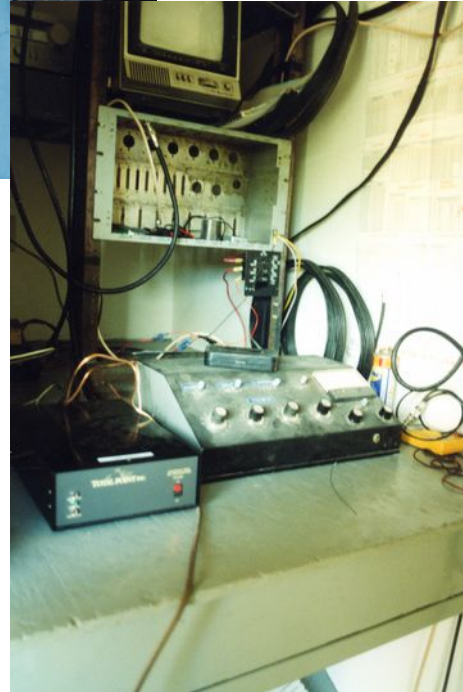
Background

Commercial broadcaster in northern Canada since 1997

Great grandfather was the first international member of SMPTE standards in 1918

Manufacturer of emergency alerting equipment for Canada's radio and television industry

Champion of open source broadcast technology



History







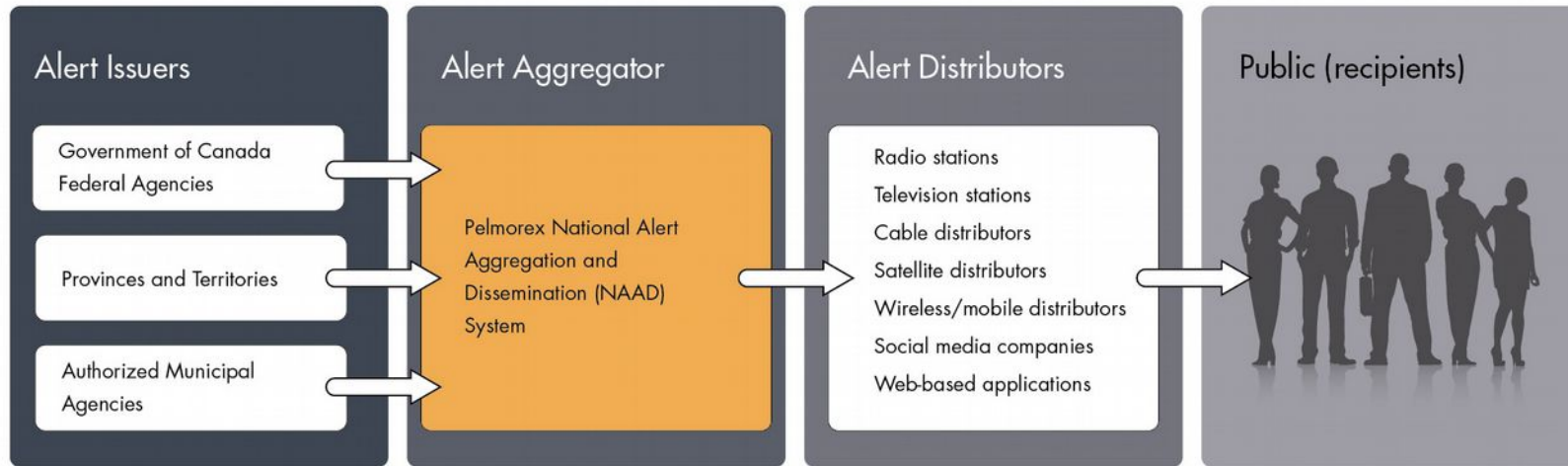
Common Alerting Protocol

- CAP is based on the ITU standard X.1303
- Support for UTF8 and Indigenous Languages
- A couple of EAS manufacturers from the US
- Proprietary systems with “secret code” firmware

CAP in Canada

- Text, audio and image support for radio and television
- CAP-CP Profile for English and French
- Pelmorex NAAD distributes CAP feeds by TCP\IP socket and C Band satellite

National Public Alerting System (NPAS)



Alert Timeline

1

An emergency management organization (**Issuer**) decides to issue an alert.

2

An authorized **Issuer** enters the alert into the **NAAD System**.

3

The **NAAD System** ensures quick and secure delivery of alerts to the **Distributors**, exactly as provided by the **Issuer**.

4

The **Public** receives alerts through various channels and responds appropriately to the emergency or situation.



Government
of Canada

Gouvernement
du Canada

Canada

Examples of Alerts

- Aggressive wild animals
- Extreme cold and blizzards
- Power and telecommunications outages
- Evacuation for fire, floods and tsunami
- Biohazards







Corona Virus Alerts

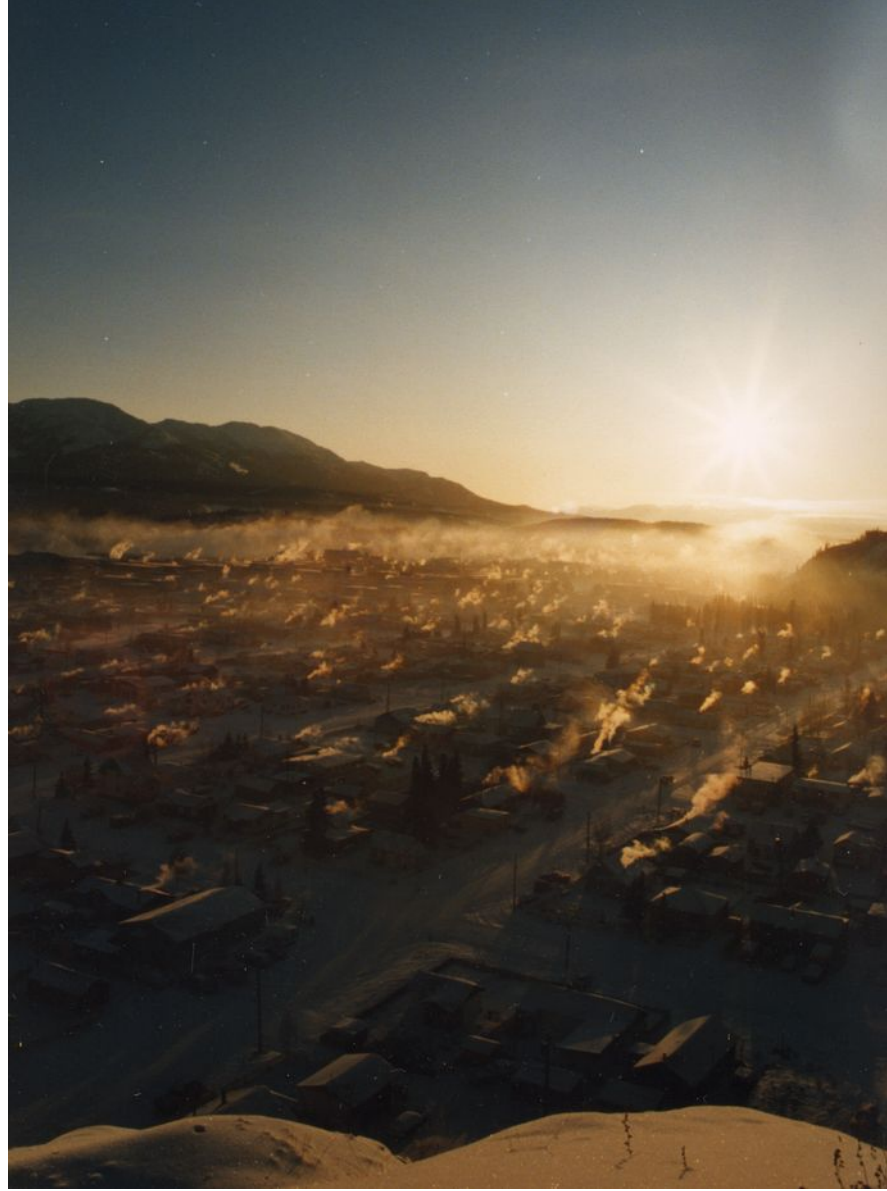


CJUC Radio Whitehorse YT

CJUC 92.5 FM

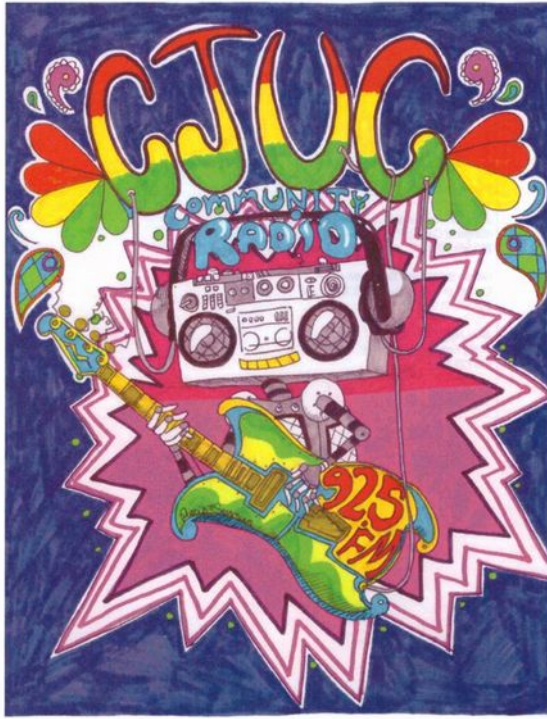


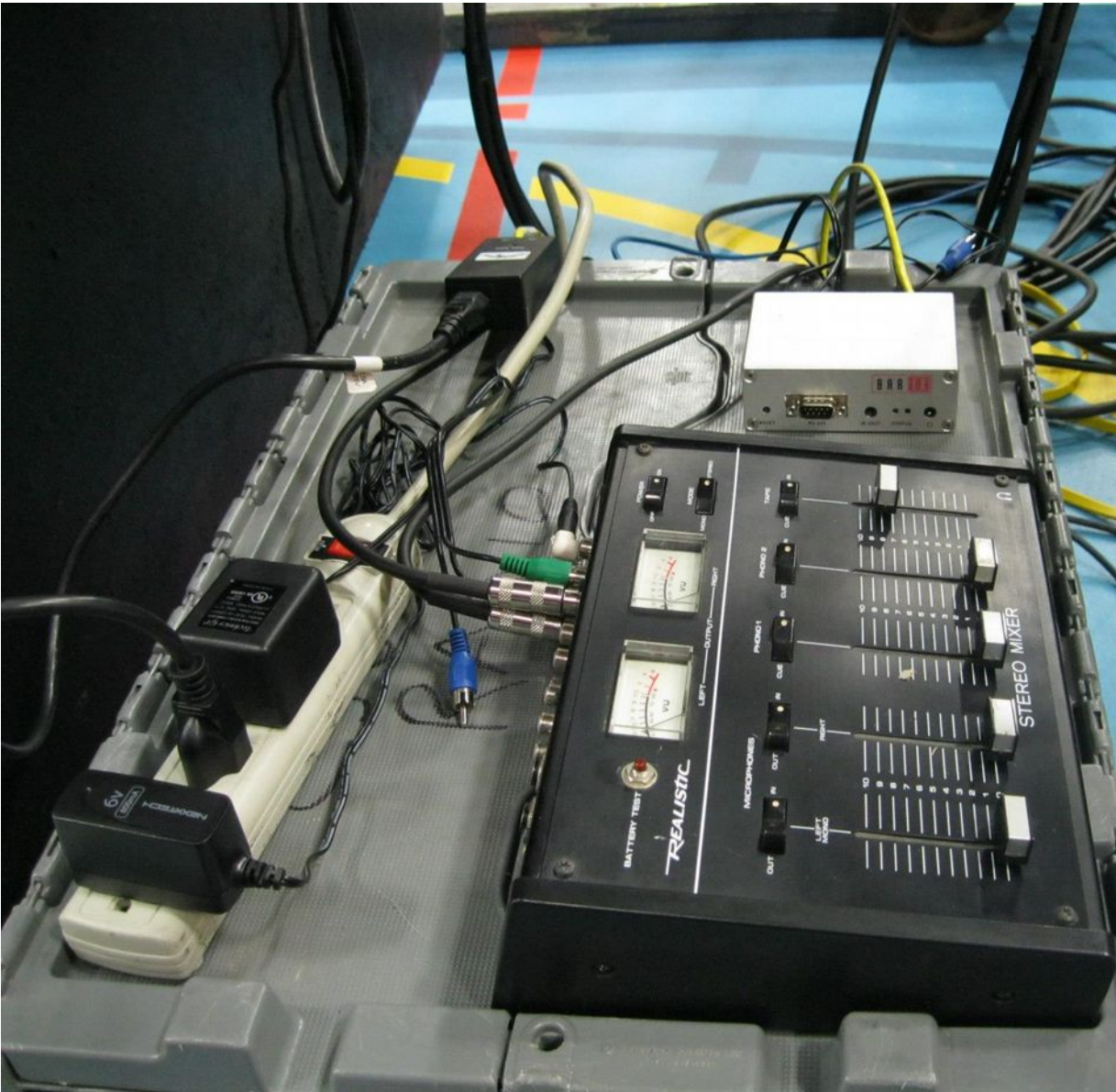












Open Source CAP Client

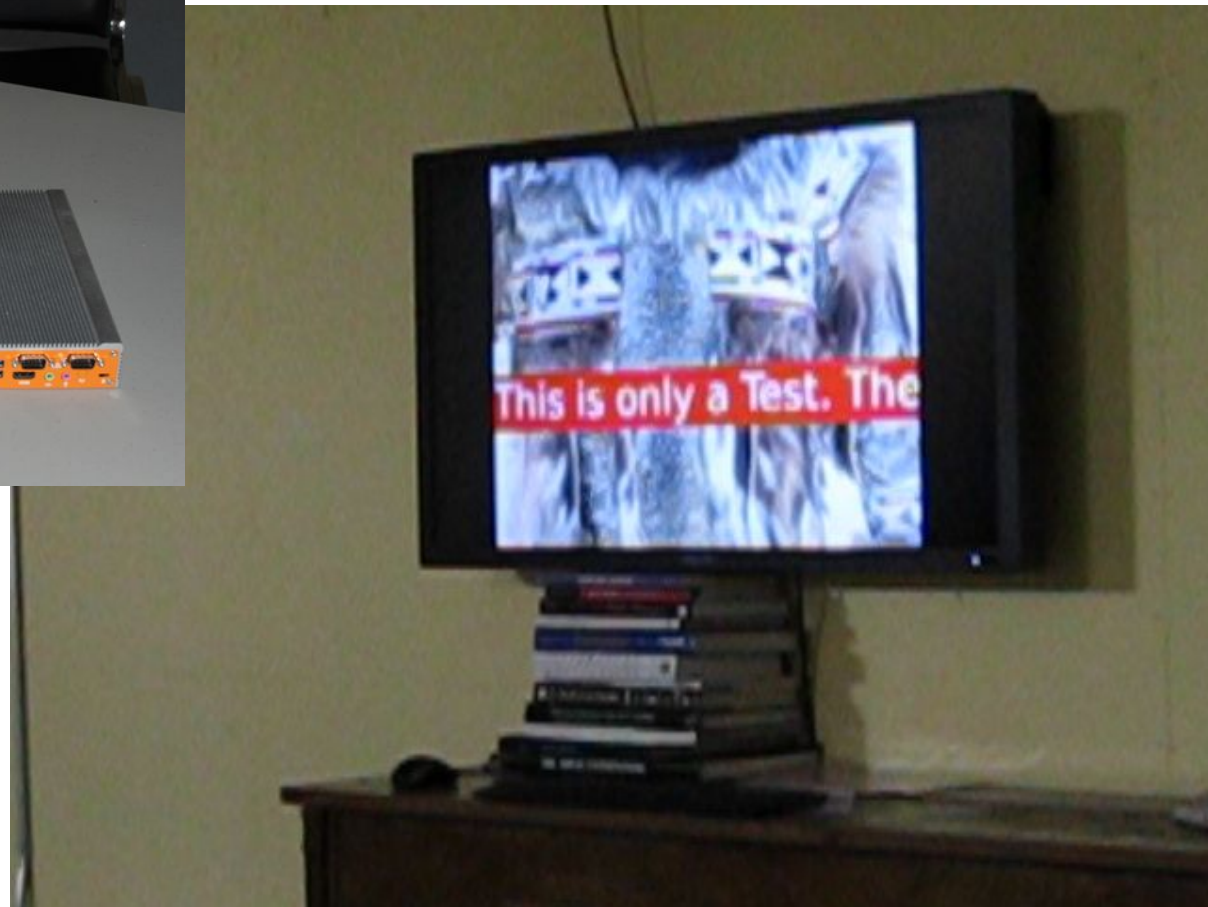
- Replicates the functionality of industry standard alerting boxes
- Linux based web application
- Standalone operation with a plug and play solution
- Runs on generic PC equipment including Raspberry PI

Workflow Example

- 1) Equipment is configured to/for available languages in alerting area.
- 2) Valid CAP message is received matching alerting area polygon
- 3) Starts with standard alerting tones
- 4) Artificial Intelligence plays the message in CAP alert with available recorded phrases
- 5) Message plays in regional dialect “A severe blizzard is happening in your area, stay tuned for more details”
- 6) Regular detailed message follows in English and French.

Indigenous Alerts Solution

- Utilize Artificial Intelligence with Amazon POLLY voices
- 20 phrases recorded by community members
- Framework for other countries and languages
- Available as open source for communities to utilize



Raspberry PI



+

-

° Juneau

° Sitka

RAINFALL WARNING IN EFFECT[\(LINK TO SOURCE\)](#)

Description: rainfall warning in effect

Expires: 2015-01-26T15:32:00-08:00

Originated from CAP Alert:

Environment Canada, 2015-01-25T23:32:00-00:00,

2.49.0.1.124.6de6d887.2015

Area: Central Coast - inland sections

☐ Contrast☐ Watercolor☒ OpenStreetMap☒ MODIS Fires - Past 24h☒ MODIS Fires - Past 48h☒ NOAA Alerts (USA)☒ NAAD Alerts (CAN)☐ Clouds☐ Snow☒ Precipitation**Openbroadcaster**

OBS Player

(Active)

OBS Player

(Emergency)

MODIS Hotspots

Fire Hotspot

NAAD Alerts(CAN)

event type

symbol

Air Quality

Rainfall

Squall

Freezing Drizzle

Freezing Rain

Snowfall

Blowing Snow

Winter Storm

Blizzard

Fog

Wind

Cold Temperature

NOAA Alerts (USA)

Alerting System Tests

Active Alerts

Last Heartbeat Received: 00:45 min
Alerts Will Play In: 20:57 min

Cancel	Sender	Times Played	Headline
<input type="checkbox"/>	YukonEmergencyMeasuresOrganization B04BEF53-A633-A158- C39F-FE951269FAF1 2015-09-16T15:45:15-07:00	1	<p><u>Test -this is a scheduled test of the yukon emergency measures organization's emergency public alerting system no action is required this is a test only</u></p> <p>This is a scheduled Test of the Yukon Emergency Measures Organization's emergency public alerting system No Action is required This is only a Test. There is No threat of an emergency or disaster in progress at this time. If this had been an actual emergency or threat. You would hear instructions that would assist you to protect you and your family. No Action is required. This is only a Test.</p>

```

Terminal - cfet:/opt/obplayer
File Edit View Terminal Tabs Help
6 33 05 00IBCB48B8 9BC8 65A2 2ACB 675DD7D2B1AF.xml
[Sep 16 2015 22:44:28 UTC] [debug] fetching alert 0895C969-3D67-6704-78BD-940AE6
EE1EFB using url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T13_5
8_00_07_00I0895C969_3D67_6704_78BD_940AE6EE1EFB.xml
[Sep 16 2015 22:44:32 UTC] [debug] fetching alert 2.49.0.1.124.c88ab03e.2015 usi
ng url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T21_04_00_00_00
I2.49.0.1.124.c88ab03e.2015.xml
[Sep 16 2015 22:44:38 UTC] [debug] fetching alert 2.49.0.1.124.a3248aeb.2015 usi
ng url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T21_04_00_00_00
I2.49.0.1.124.a3248aeb.2015.xml
[Sep 16 2015 22:44:43 UTC] [debug] fetching alert 2.49.0.1.124.d468c527.2015 usi
ng url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T21_04_00_00_00
I2.49.0.1.124.d468c527.2015.xml
[Sep 16 2015 22:44:47 UTC] [debug] fetching alert 2.49.0.1.124.faf767e3.2015 usi
ng url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T21_04_00_00_00
I2.49.0.1.124.faf767e3.2015.xml
[Sep 16 2015 22:44:52 UTC] [debug] fetching alert 0C60F61D-3AE4-9810-5275-84EDD1
5607A9 using url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T19_2
8_02_03_00I0C60F61D_3AE4_9810_5275_84EDD15607A9.xml
[Sep 16 2015 22:44:57 UTC] [debug] fetching alert 2D2E0E21-B7C7-7777-FF29-F38E83
6F98A4 using url http://capcp1.naad-adna.pelmorex.com/2015-09-16/2015_09_16T19_3
1_18_03_00I2D2E0E21_B7C7_7777_FF29_F38E836F98A4.xml
[Sep 16 2015 22:45:17 UTC] [debug] received alert B89309D3E37F46CEAEFAD26D33EEB7
A9 (2015-09-16T22:45:15-00:00)
[Sep 16 2015 22:45:27 UTC] [debug] received alert B04BEF53-A633-A158-C39F-FE9512
69FAF1 (2015-09-16T15:45:15-07:00)
[Sep 16 2015 22:45:47 UTC] [alerts] playing active alerts (1 alert(s) to play)
[Sep 16 2015 22:45:47 UTC] [player] now playing track ?: Emergency Alert - B04BE
F53-A633-A158-C39F-FE951269FAF1 (id: 0 file: canadian-attention-signal.mp3 durat
ion: 8s type: 'audio' source: alerts)
[Sep 16 2015 22:45:47 UTC] [player] resuming track at 0.134216070175 seconds.
[Sep 16 2015 22:45:55 UTC] [player] now playing track ?: Emergency Alert - B04BE
F53-A633-A158-C39F-FE951269FAF1 (id: 0 file: 2015_09_16T15_45_15_07_00B04BEF53-
A633-A158-C39F-FE951269FAF1-english.wav duration: 34.656s type: 'audio' source:
alerts)
[Sep 16 2015 22:45:55 UTC] [player] resuming track at 0.141160964966 seconds.

```


UNESCO Year of the Indigenous Languages

- 7 thousand languages spoken worldwide
- 370 million Indigenous people in the world
- 90 countries with Indigenous communities
- 5 thousand different Indigenous cultures

Indigenous Nations in Canada

- 634 groups; First Nations, Inuit and Metis
- 60 regional dialects with 20 actively spoken
- Only a handful will survive Cree, Ojibway, Tsilhqot'in and Inuktitut
- Inuktitut\Inuinnaqtun in remote arctic communities spoken by 30% of households



Nuxalk First Nation

CKNN 91.1 FM
Bella Coola, British Columbia





**LOADING ZONE
NO
PARKING**







QUIET

QUIET

91.1 FM Bella Coola
nuxalk
RADIO.COM

Lhulhamktulhs ala
ts'ktaliwalh alh ti
s-kulhulmcilh t'ayc
n wa sulutilh ats.

Challenge

- Not everyone is located near a cell base station or has a smartphone
- Equipment manufacturers do not support Indigenous dialects
- Alerts understood by Indigenous people in remote communities
- TTS engines do not presently support Indigenous languages

Emergency Workflow

- Priority override of a scheduled show
- PSA Message delivery to all stations
- CAP Alerting from NAAD



Kitikmeot Radio Network Cambridge Bay, Nunavut

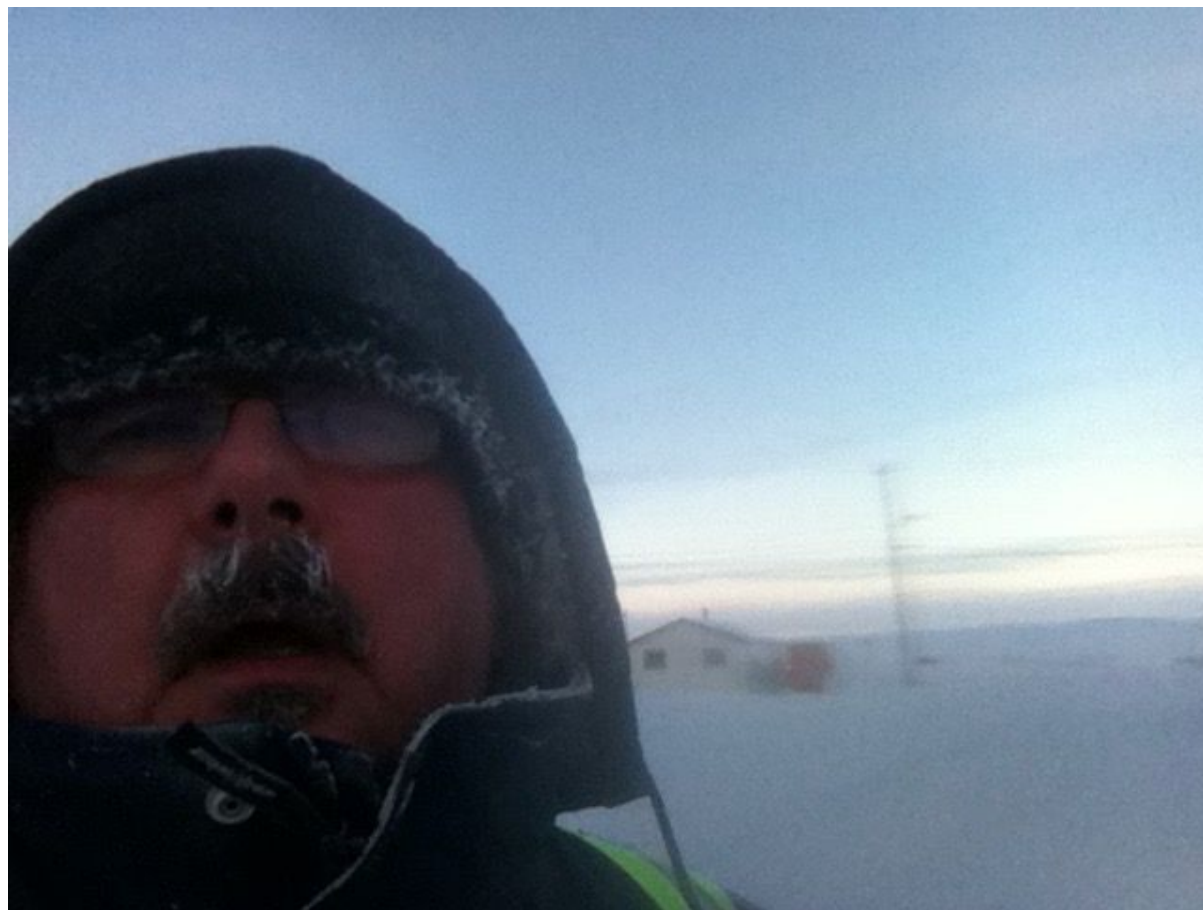




























Resources

observer on GitHub

obplayer on GitHub

Support Site

DIY Maker Space Instructions

Get Involved

Do you have an idea to make open source CAP emergency alerting better?

Have some coding skills? Want to learn?

We want to hear from you!

Contact us

www.openbroadcaster.com



OpenBroadcaster

Thank You!