Can Technology Improve the Event Board?

Lightship

BRITISH COLUMBIA | Emergency ManagementBC

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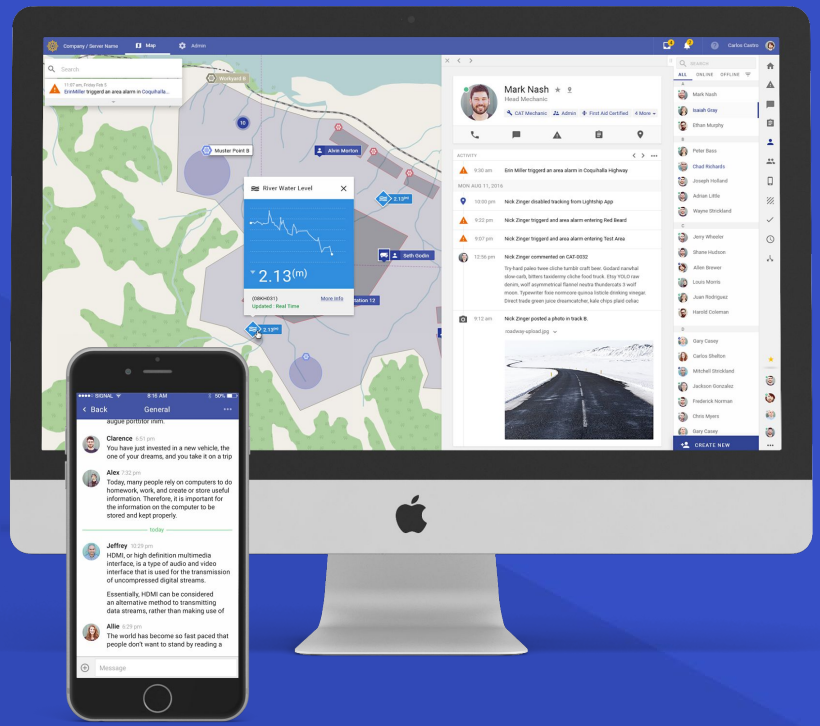
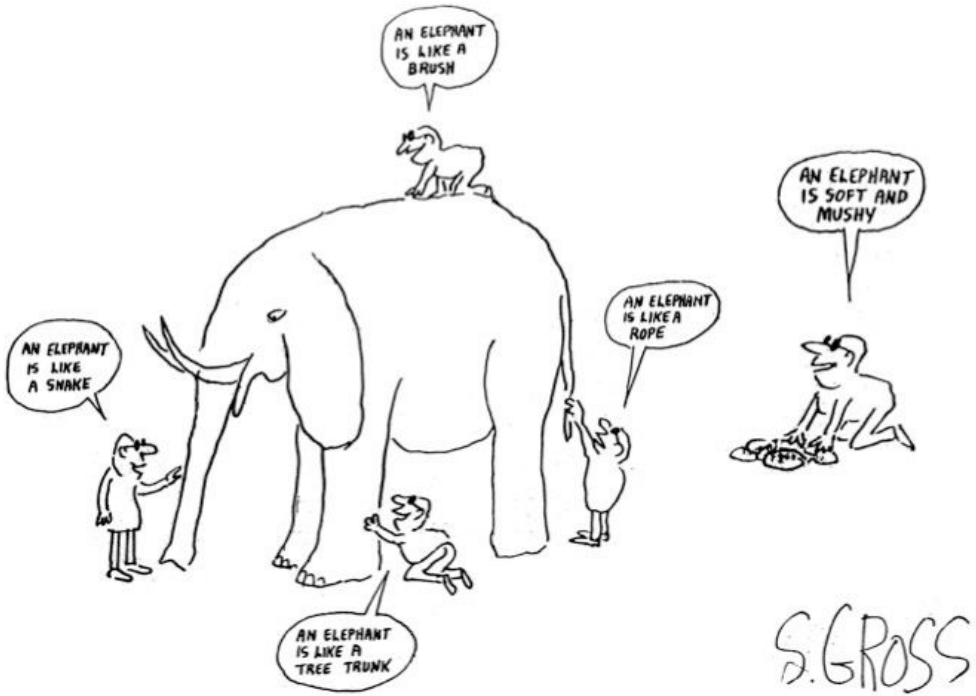



AN ELEPHANT IS LIKE A BRUSH
AN ELEPHANT IS SOFT AND MUSHY
AN ELEPHANT IS LIKE A SNAKE
AN ELEPHANT IS LIKE A ROPE
AN ELEPHANT IS LIKE A TREE TRUNK
S.GROSS

Information Sharing & Communication

- Usually identified in every exercise / event debrief as something that could be improved.

- Direct correlation between size of event, the number of involved agencies and the degree to which communication is challenging.

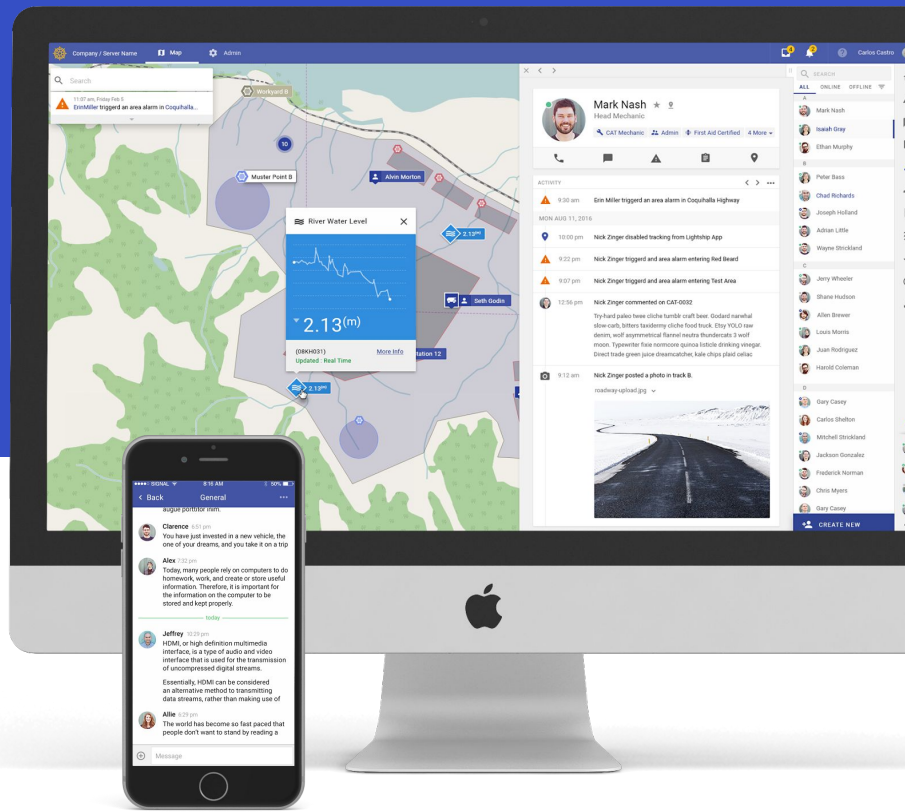
Information Sharing & Communication

- Individual people in ICS roles (and responders in general) are generally very good at communicating
- There are simply too many players trying to share information in a large event
- This a challenge that is generally common in modern information management

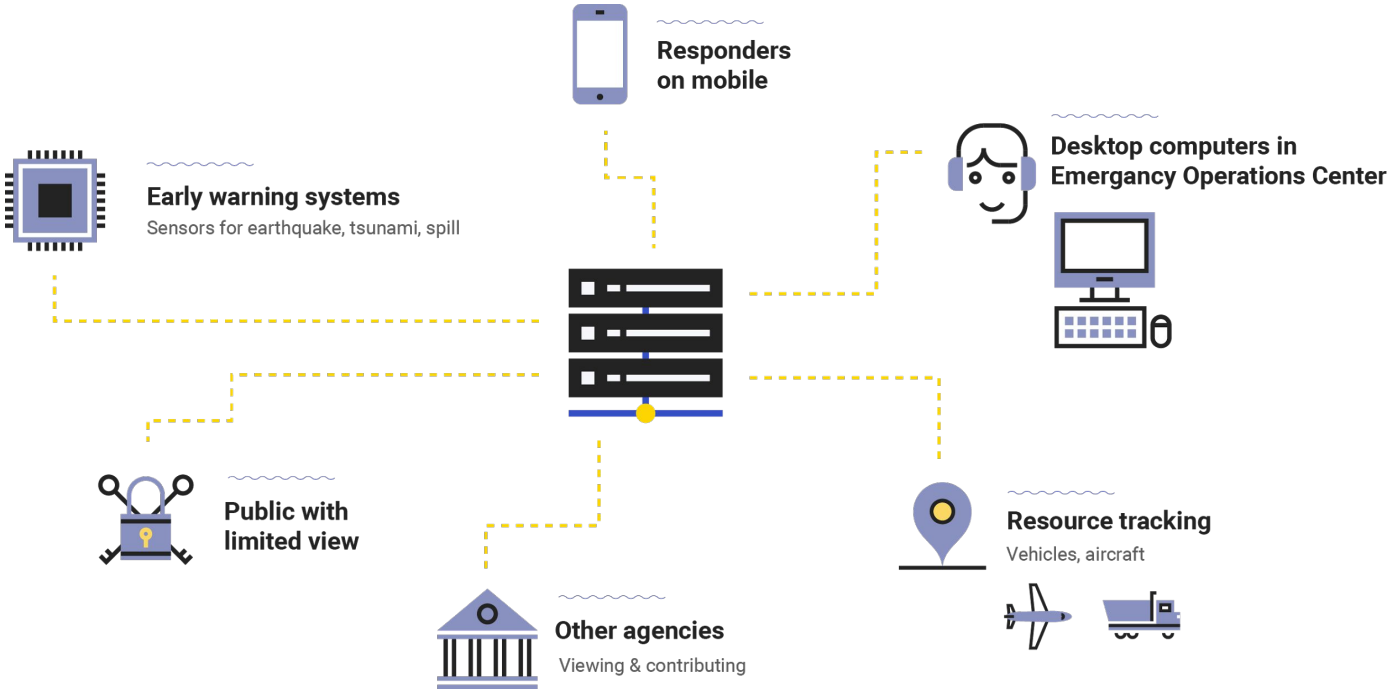
Common Operating Picture

*A common operational picture (COP) is a **single identical display of relevant (operational) information** (e.g. position of own troops and enemy troops, position and status of important infrastructure such as bridges, roads, etc.) **shared by more than one Command**. A COP facilitates collaborative planning and assists all echelons to achieve **situational awareness***

https://en.wikipedia.org/wiki/Common_operational_picture



Common Operating Picture



Current state

Operating picture is fragmented

EM Trends

- Climate changed
- Fires, flood, drought, earthquake

Common COTS tools, hybrid systems etc.

- Google “top 10 emergency management software tools” = 48 tools
- 75% of survey respondents use combo of spreadsheets, word docs etc.

Coastal Response learnings

- Of initial 124 findings or recommendations, 30 have some direct relevance to a COP; several others relate back to situational awareness, communications and/or info sharing

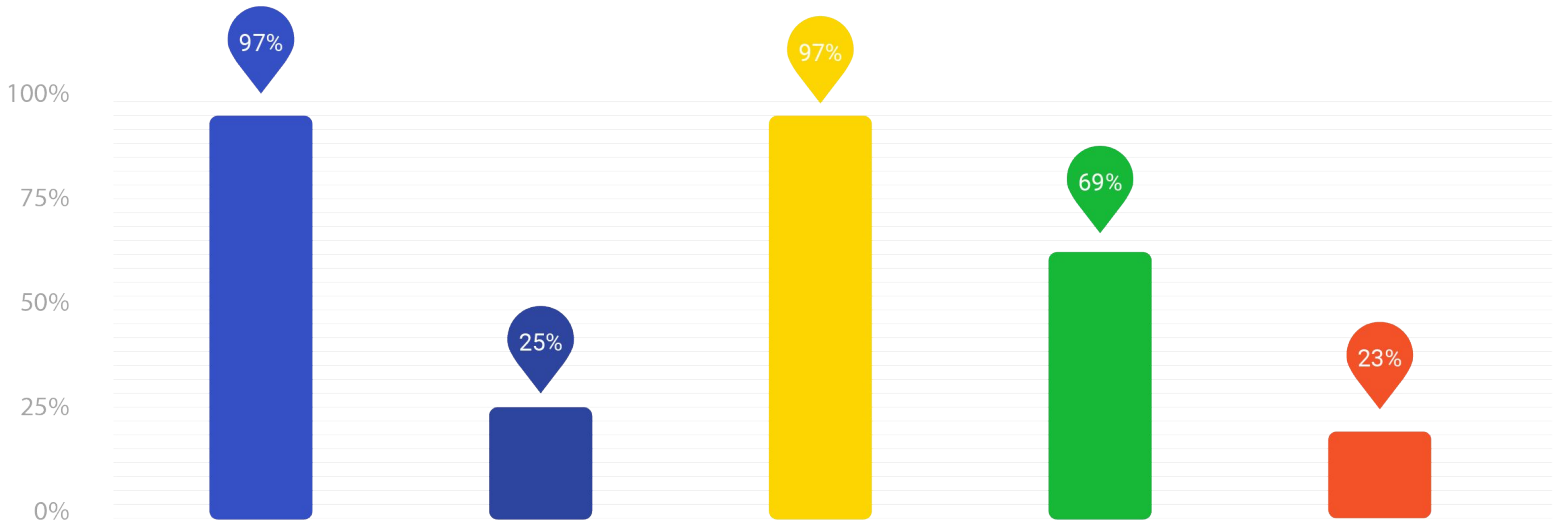
What type of organization do you work at?

- **42.2%** Search & Rescue
- **22.2%** Other
- **11.1%** Private Company or Industry
- **8.9%** Provincial Government
- **8.9%** Reginal Government (Reginal District, Tribal Council, ect.)
- **6.7%** Local Government

Survey

- Distributed to all 126 BC Association of Emergency Managers (BCAEM) members
- Wanted to get a sense of current state in various organizations / agencies
- Not academically designed
- 45 responses (~30%)

How would you expect to gain and share situational awareness?



Email

Reginal Government
(Reginal District,
Tribal Council, ect.)

Fax

Voice

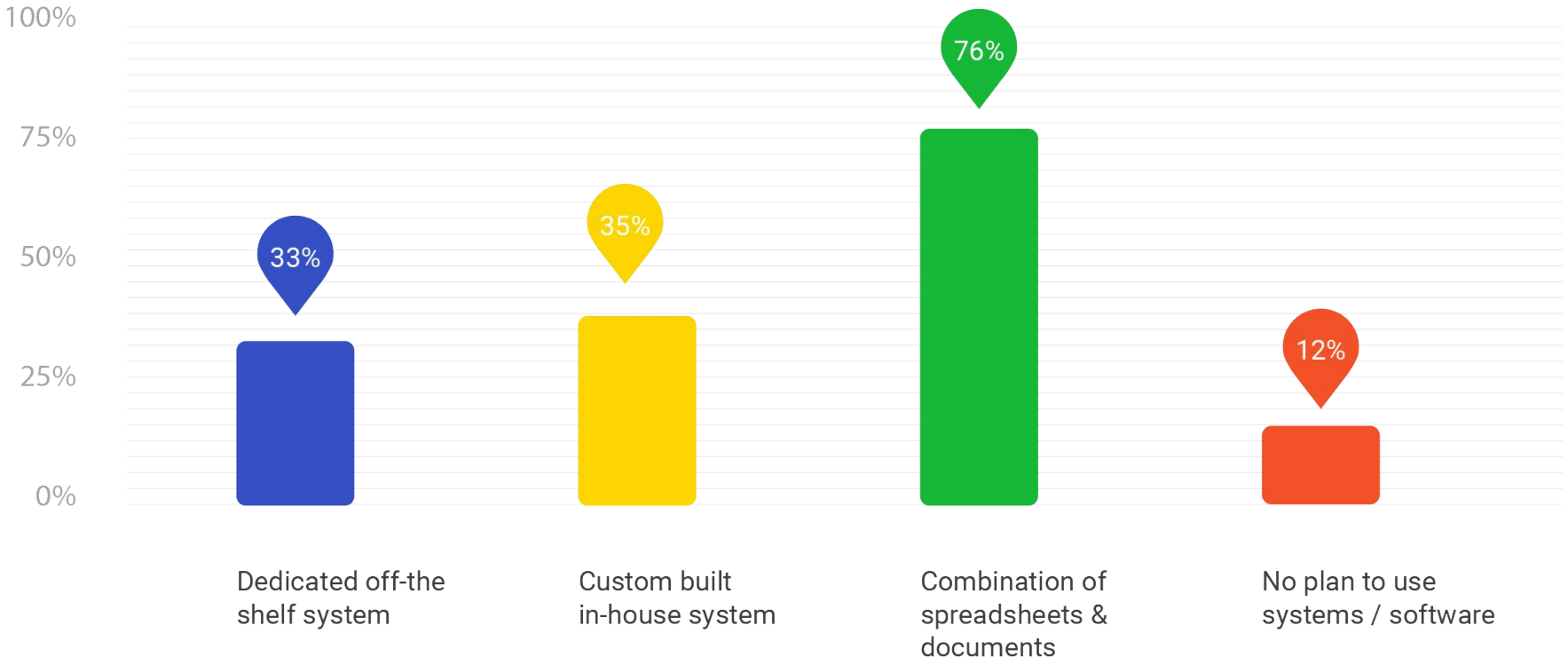
Radio
Phone Calls

Software

Other

Text
Social Media
Public Notification System
Meetings
Safety Apps

What systems / software do you use?



Frequency of Outage

While working for your current employer, how many times have you personally experienced loss of each of these DURING an emergency (not an exercise)?

2.88	2.09	2.61	1.30	0.73	4.21
Power	Internet	Cellular Service	Land Line	Radio (VHF)	Internal Systems or Networks

What would you spend money on?

If you had more budget, what would be the first thing you would invest in, specific to Emergency Preparedness?

3.10	2.62	4.23	3.80	4.05	3.92
Communications Infrastructure. Radios Sat Phone	**Additional staff positions**	**Internet connectivity** Mobile Satellite	**Training budget**	**Office space / EOC**	**Software**

Comments

“Technology must be made available to both public and private assets so there is a clear understanding of what is going on as well as the requirements of assistance and/or mutual aid. Currently, government is working in silo's and not engaging the private sector for information or assistance”

Comments

“Common Operating Picture platforms are always over designed and complicated. COP needs to be simple and easy to use.”

Comments

“Unless used all the time technology goes stale. If the response agencies can use the same or similar technology that an EOC would use less chance of going stale.”

Comments

“Most technological solutions involve a steep learning curve. Once processes have been learned, that knowledge must be maintained. This is exceedingly difficult when participants in an EOC are drawn into the operation only once every few months or years and when they come from multiple agencies. To be effective in an emergency activation, IT staff with detailed information on any system in use must be immediately available to assist operational staff.”

Comments

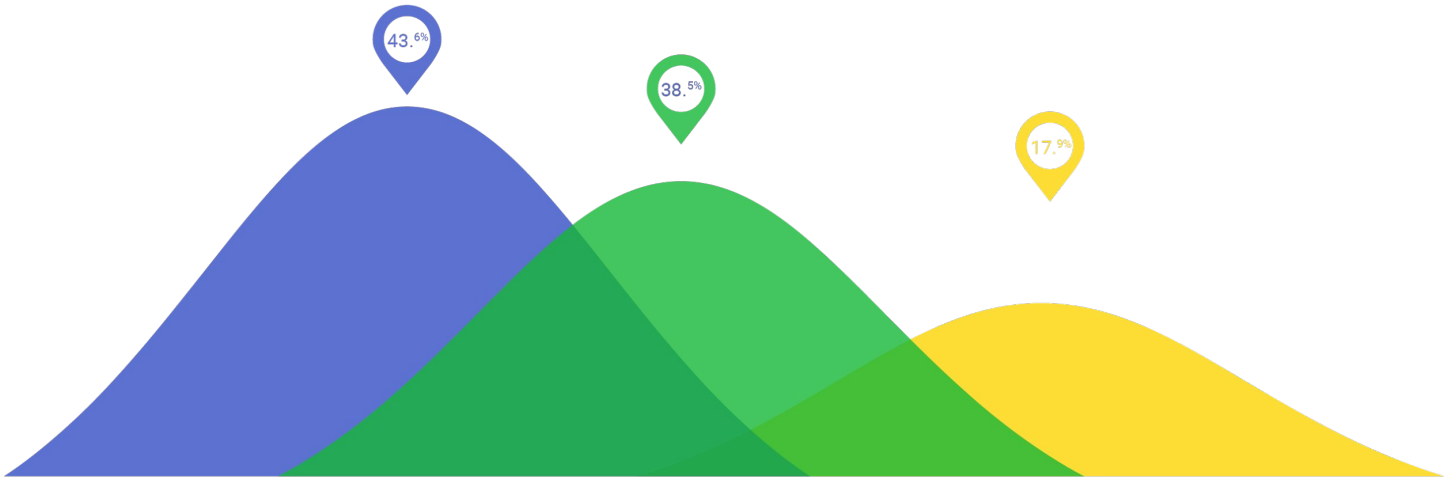
“If regionally, we have 21 different local governments, then we potentially have 21 different operating systems...then add regional, provincial and federal layers/systems on top of this... :) Good luck!”

Comments

“Simplify, simplify, simplify.
Systems need to be flexible and resilient.”

Who should ‘own’ the COP?

If it existed, what organization should 'own' the common operating picture in the case of a multi-agency response? (i.e.who is responsible for coordinating the collection and sharing of information?)



43.6%
Local EOC or Incident Command

38.5%
Provincial Government (EMBC)

17.9%
Other

Who should ‘own’ the COP

“all the players not just government”

“Depends what the system is I believe the Gov should own, with the exception of being able to lock out sensitive area relating to FN”

“Each should own but be easily connected”

“as you have first responders that are local (Fire), provincial (BCAS) and federal (RCMP) - a minimum of a regional approach is necessary”

“Scope of incident would defined ownership; a multi-agency response limited to 1 jurisdiction: IC if single incident site, Local EOC if multiple sites; EMBC if multi-jurisdictional”

“Decentralized.”

“ground zero response team, i.e. initial response team”

Common themes

Current

- Email, radio, & conference calls rank high in current methods
- Software is being used, but various products to variable extents
- Concern about resilience

Considerations for establishing any COPs

- Timely info needs to be shared at all levels from site to senior decision makers; local governments don't always have the "big picture"
- Needs to integrate with existing systems; relatively open access
- Easy to use, minimal training to use
- Cost prohibitive for smaller organizations; other
- Resistance to change creates barriers; many "silo'ed" organizations
- Most current systems are "low" technology
- "lower" tech practices still needed for redundancy
- Need to be used regularly

A brief note on resilience

Cloud infrastructure

- More reliable / $ spent than private infrastructure
- ‘Real’ cloud coming to Canada! (Amazon, Azure etc)

Satellite data

- New satellites launched and scheduled
- Higher bandwidth, smaller devices

LEO Baloons and Aircraft

- Google Loon
- Facebook Aquila

LORA Network

- Canadian networks proposed for 2017

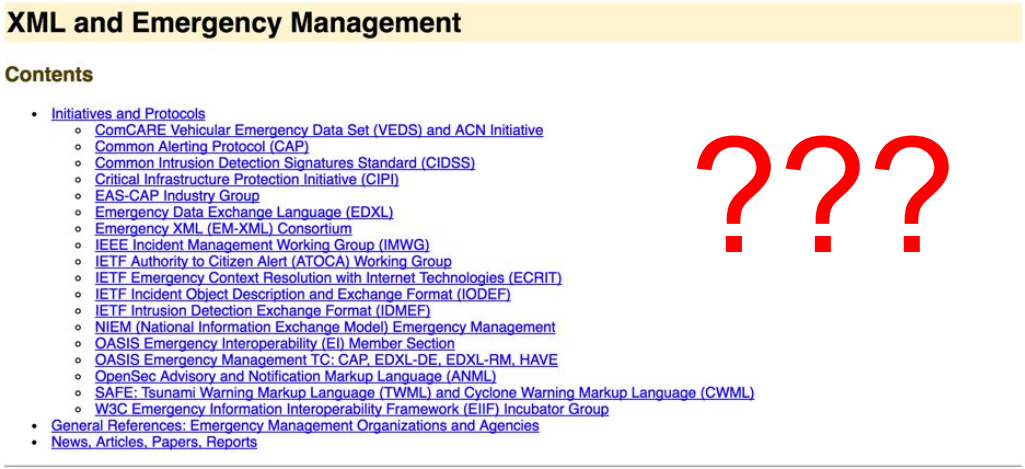
700 Mhz

- 20mhz of spectrum allowing for LTE
- Option of micro-cells

- **Advances in variable frequency Mesh technology**

Pain points

- Information is “silo’ed”
- Cost to implement, train & maintain systems too high for most organizations
- Not enough operational activations to keep current in the technology unless used regularly
- Not all systems “talk” to each other
  - Data standards vs hybrid spreadsheet/doc systems



XML and Emergency Management

Contents

- Initiatives and Protocols
  - ComCARE Vehicular Emergency Data Set (VEDS) and ACN Initiative
  - Common Alerting Protocol (CAP)
  - Common Intrusion Detection Signatures Standard (CIDSS)
  - Critical Infrastructure Protection Initiative (CIPI)
  - EAS-CAP Industry Group
  - Emergency Data Exchange Language (EDXL)
  - Emergency XML (EM-XML) Consortium
  - IEEE Incident Management Working Group (IMWG)
  - IETF Authority to Citizen Alert (ATOCA) Working Group
  - IETF Emergency Context Resolution with Internet Technologies (ECRIT)
  - IETF Incident Object Description and Exchange Format (IODEF)
  - IETF Intrusion Detection Exchange Format (IDMEF)
  - NIEM (National Information Exchange Model) Emergency Management
  - OASIS Emergency Interoperability (EI) Member Section
  - OASIS Emergency Management TC: CAP, EDXL-DE, EDXL-RM, HAVE
  - OpenSec Advisory and Notification Markup Language (ANML)
  - SAFE: Tsunami Warning Markup Language (TWML) and Cyclone Warning Markup Language (CWML)
  - W3C Emergency Information Interoperability Framework (EIIF) Incubator Group
- General References: Emergency Management Organizations and Agencies
- News, Articles, Papers, Reports

Exercises & Initiatives

Coastal Response

- Test information sharing between multiple agencies (PEP Air, HUSAR, Canadian Red Cross, PCT, local EOC, PECC)

Canadian Safety and Security Program (CSSP) & EMBC

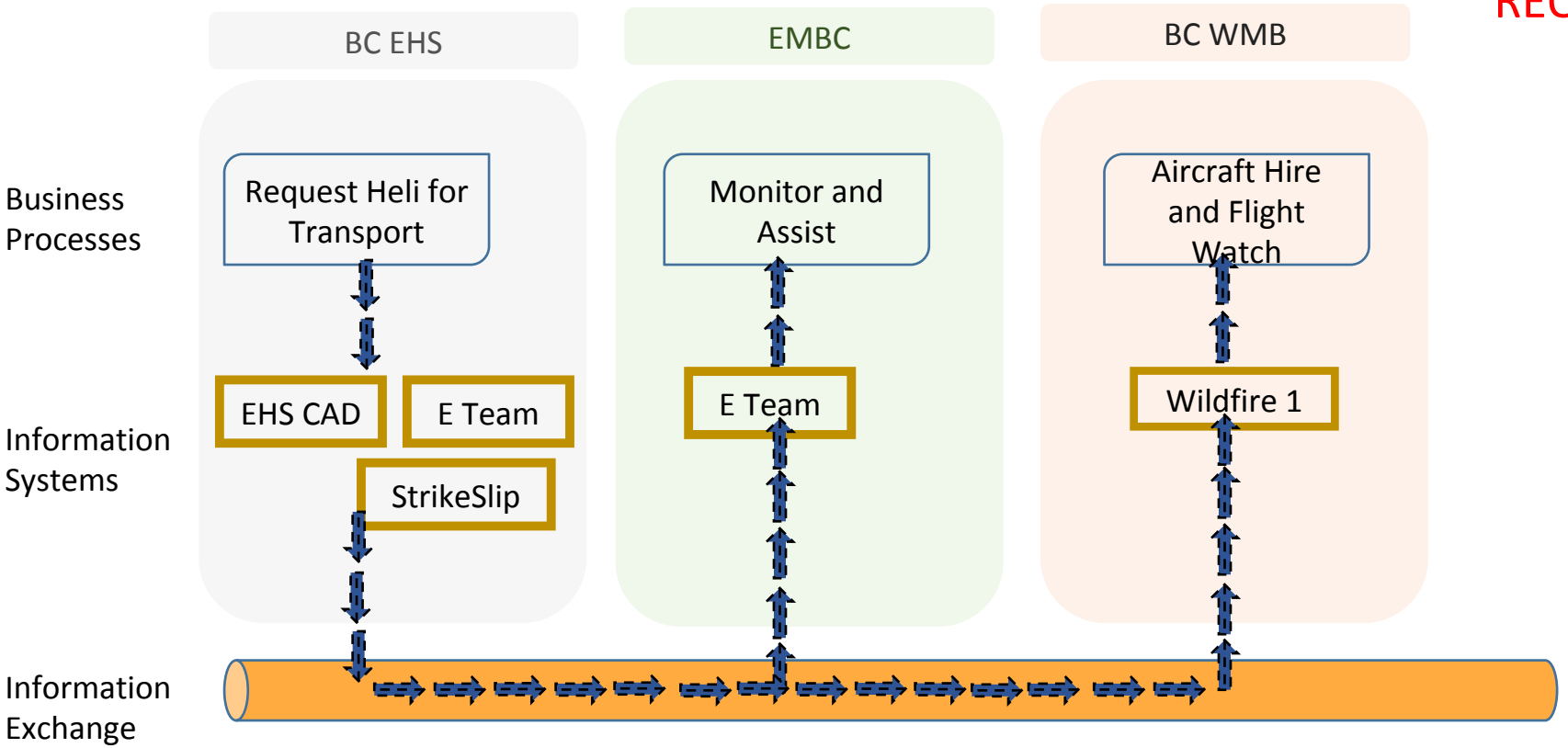
- 700 mHZ project (SFU)
- Air Operations Interoperability project

BCIP Innovation Testing Partner

- BC Climate Related Monitoring Program (Env Canada, Ministry of Environment, Wildfire, BC Hydro, Ministry of Transportation & Infrastructure
- EMBC & interested agencies (SAR, PEP Air, Oil & Gas Commission, Spill Response etc)

Mass Casualty – Aircraft Needed for Movement of Triage Station and Paramedics

REQUEST



Mass Casualty – Aircraft Needed for Movement of Triage Station and Paramedics

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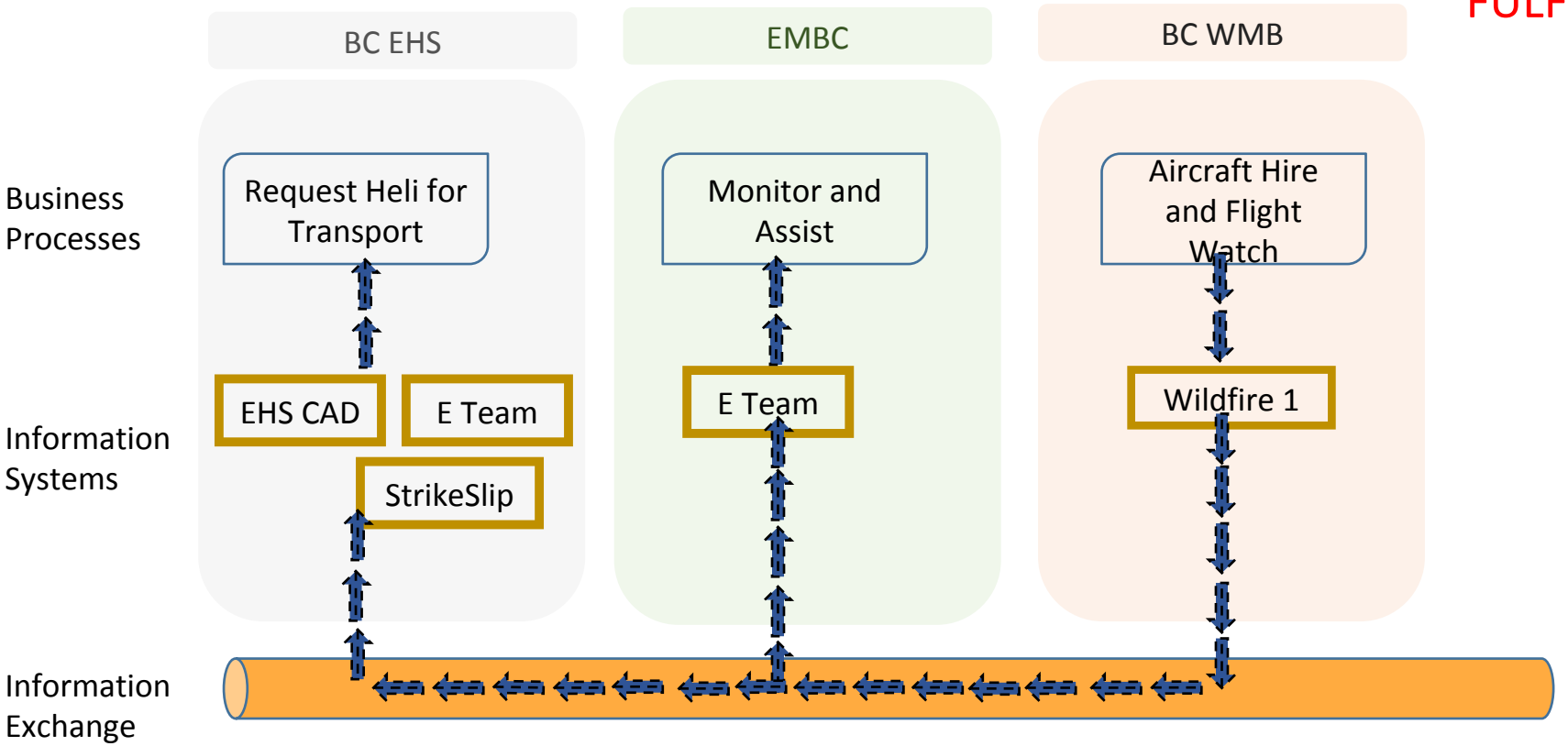
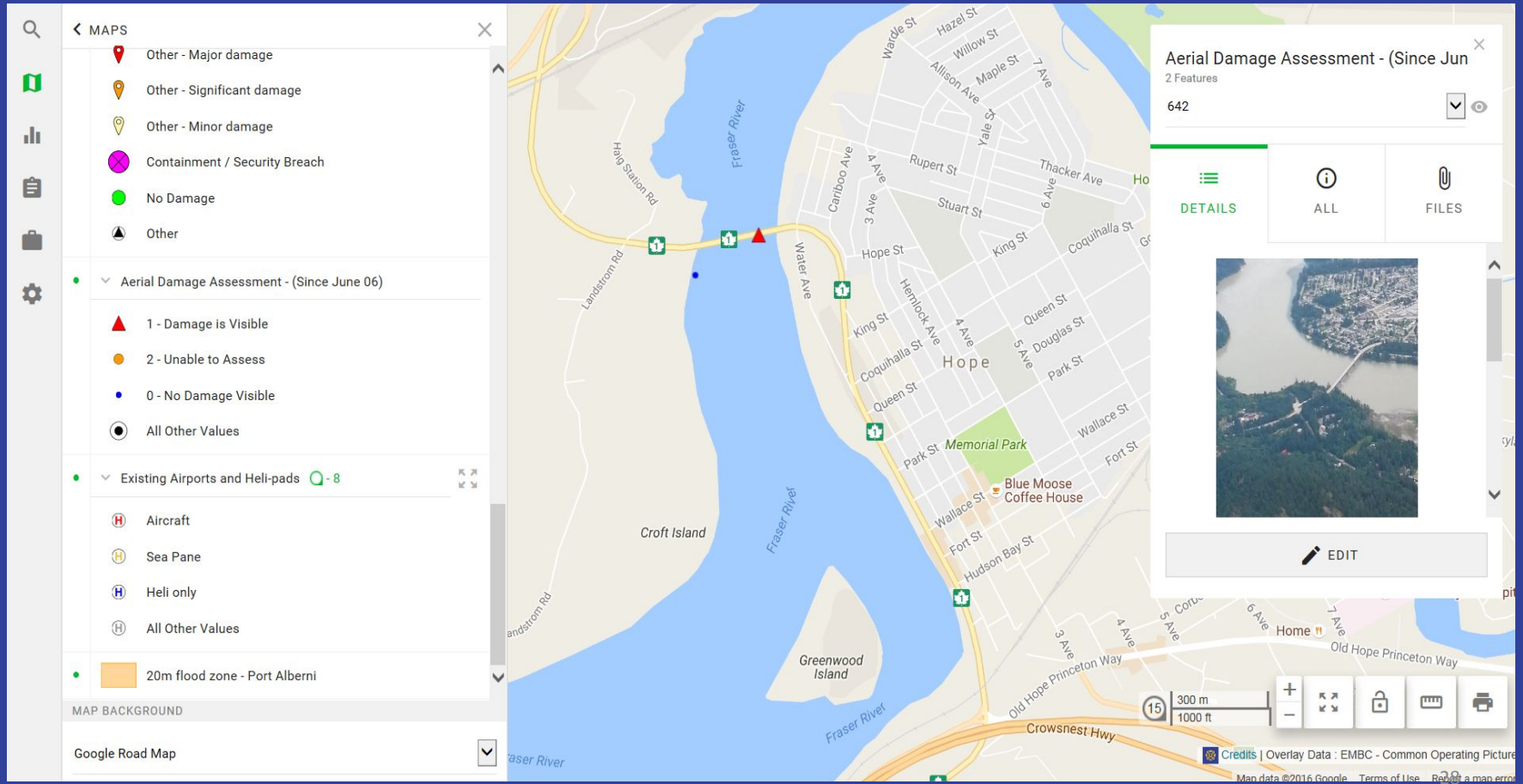
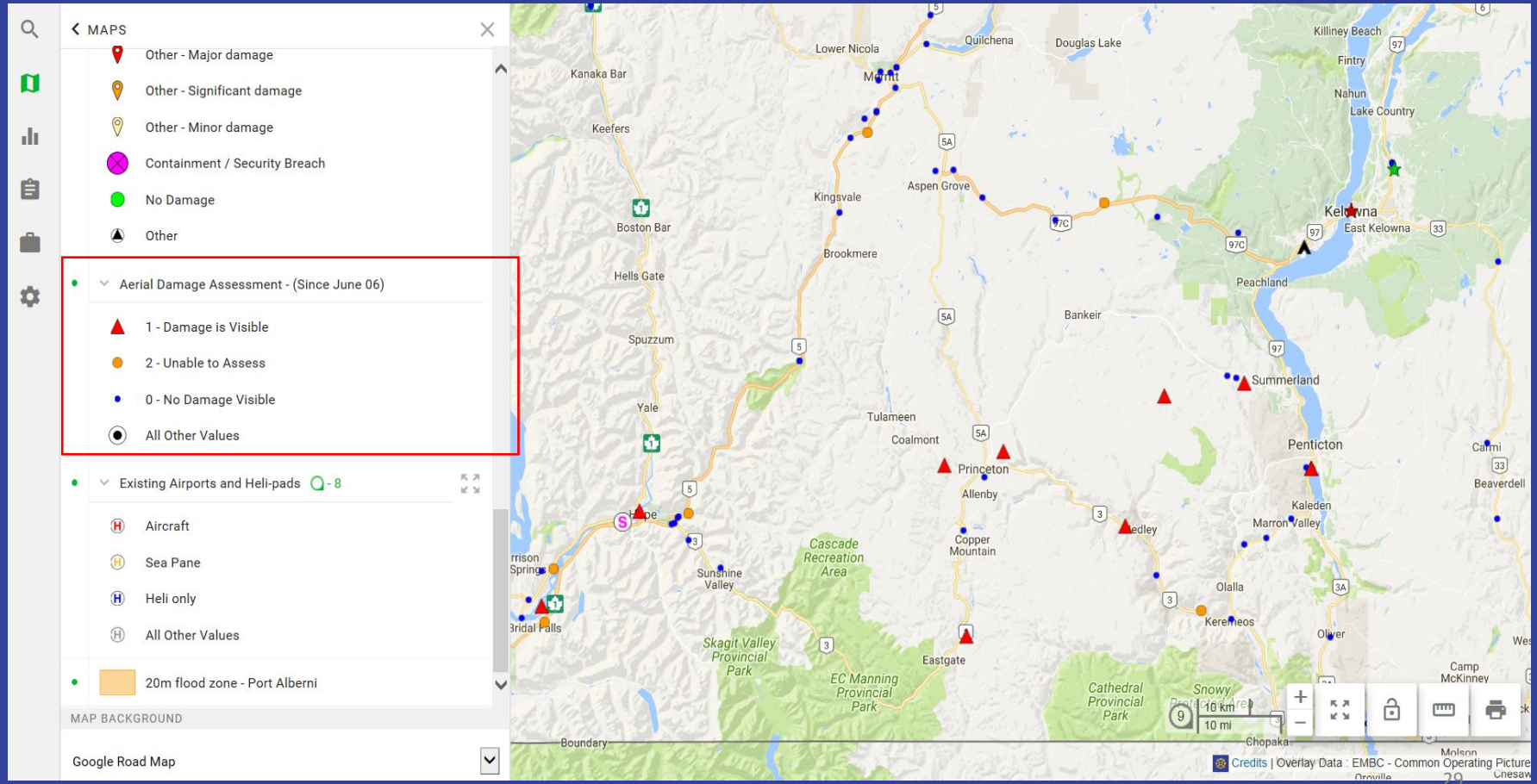


An Example from Exercise Coastal Response

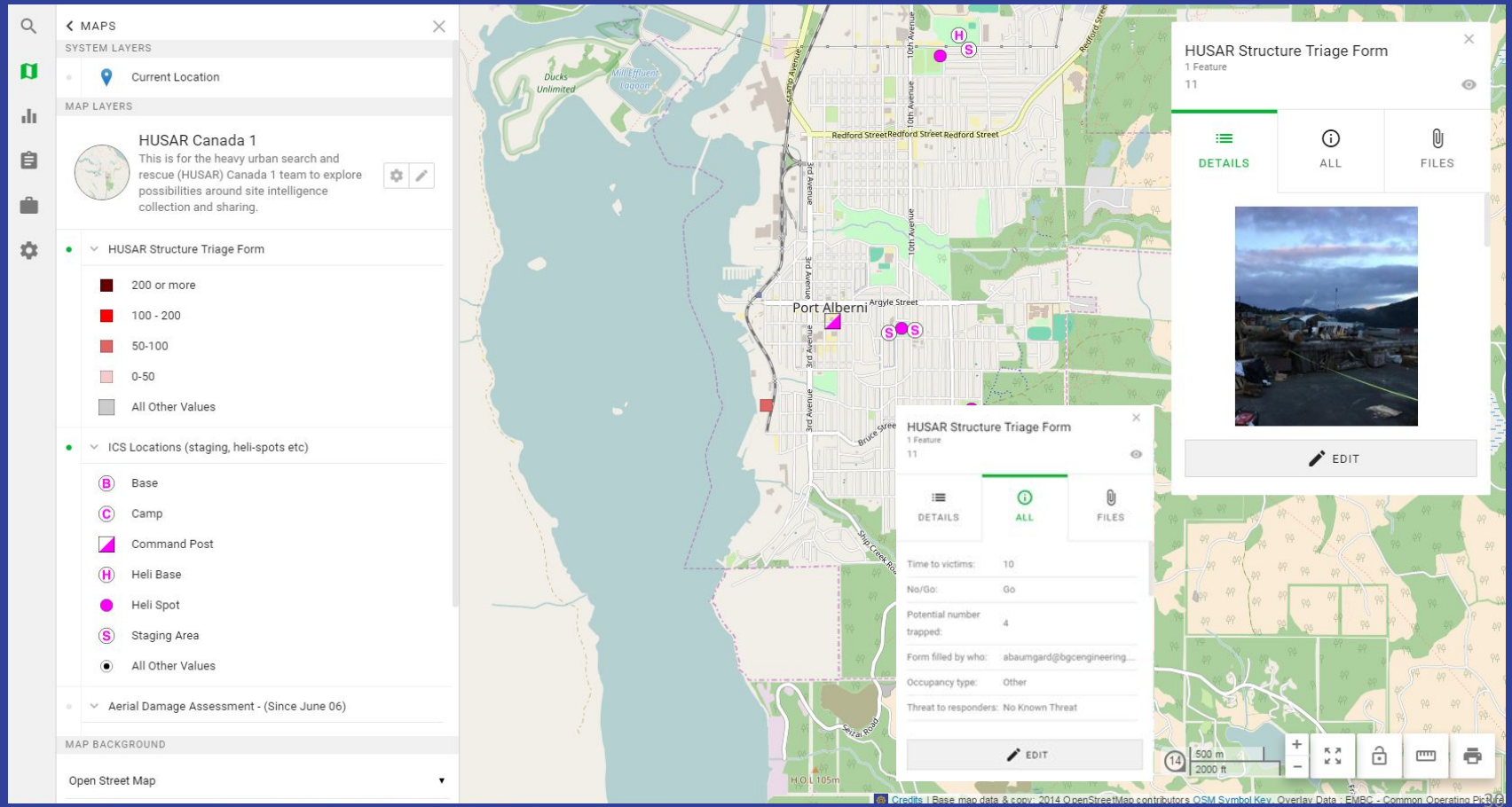
Aerial Damage Assessment



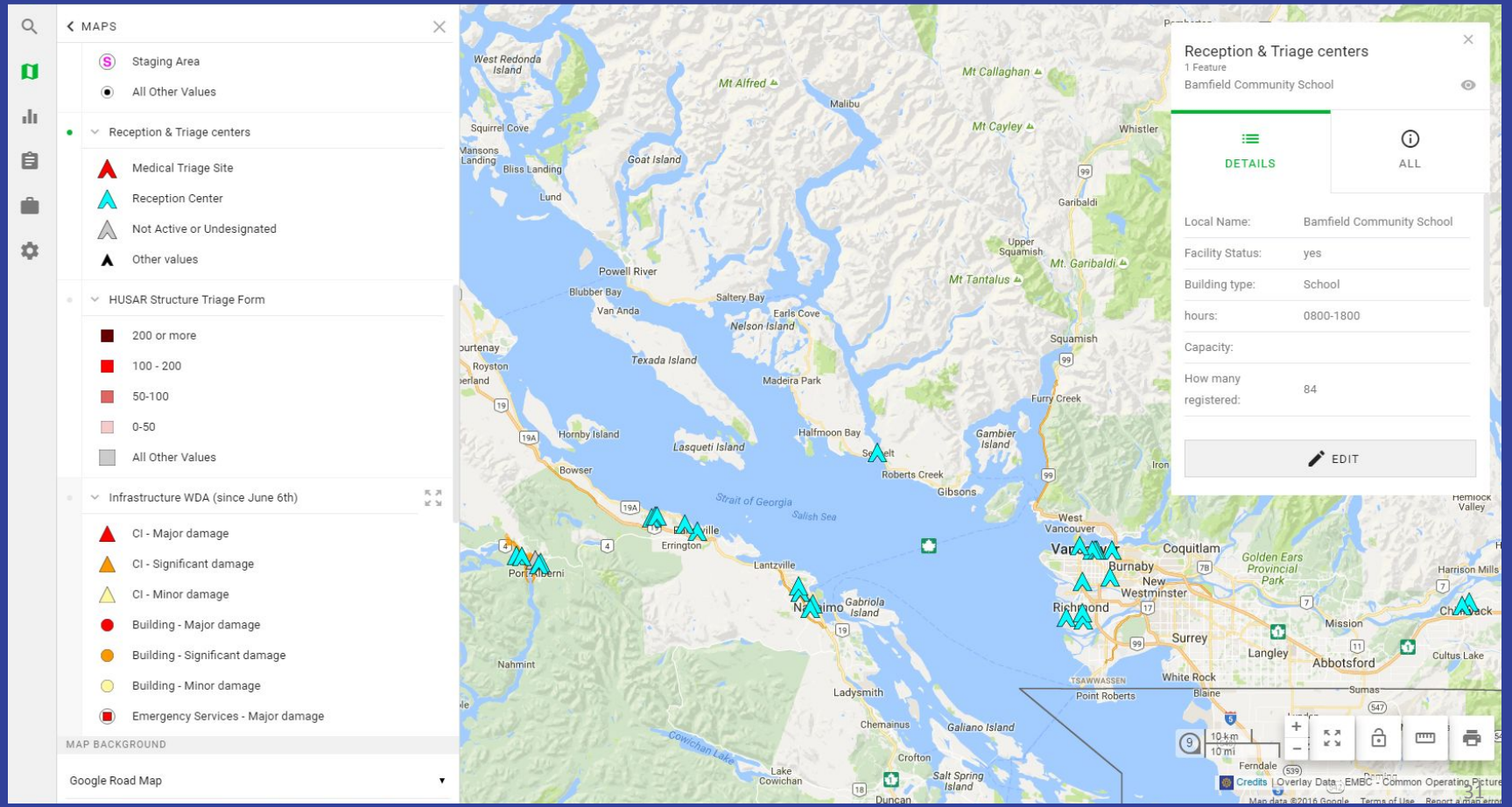
Snapshot of road conditions for responder and logistics support



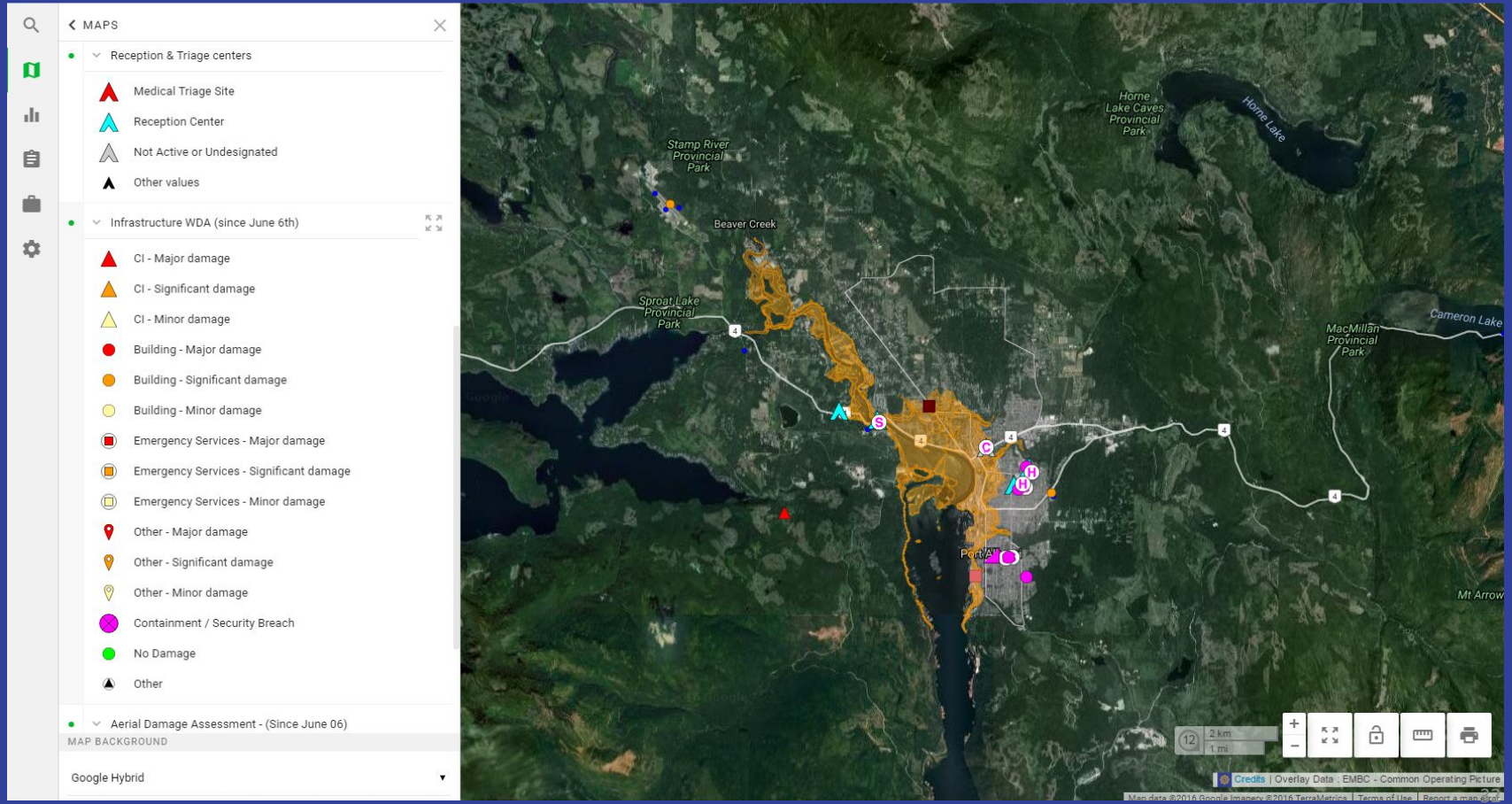
HUSAR Triage



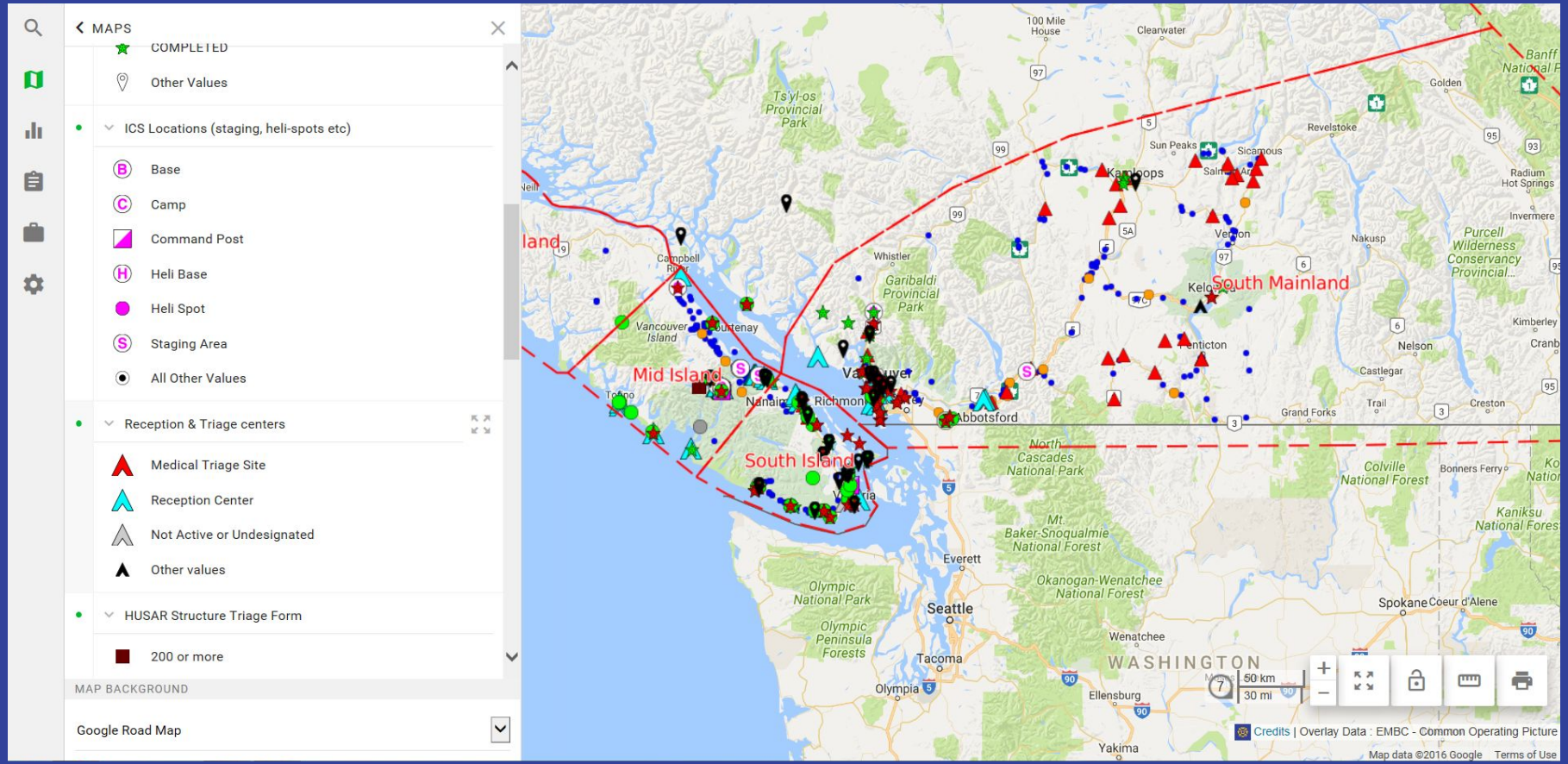
Canadian Red Cross



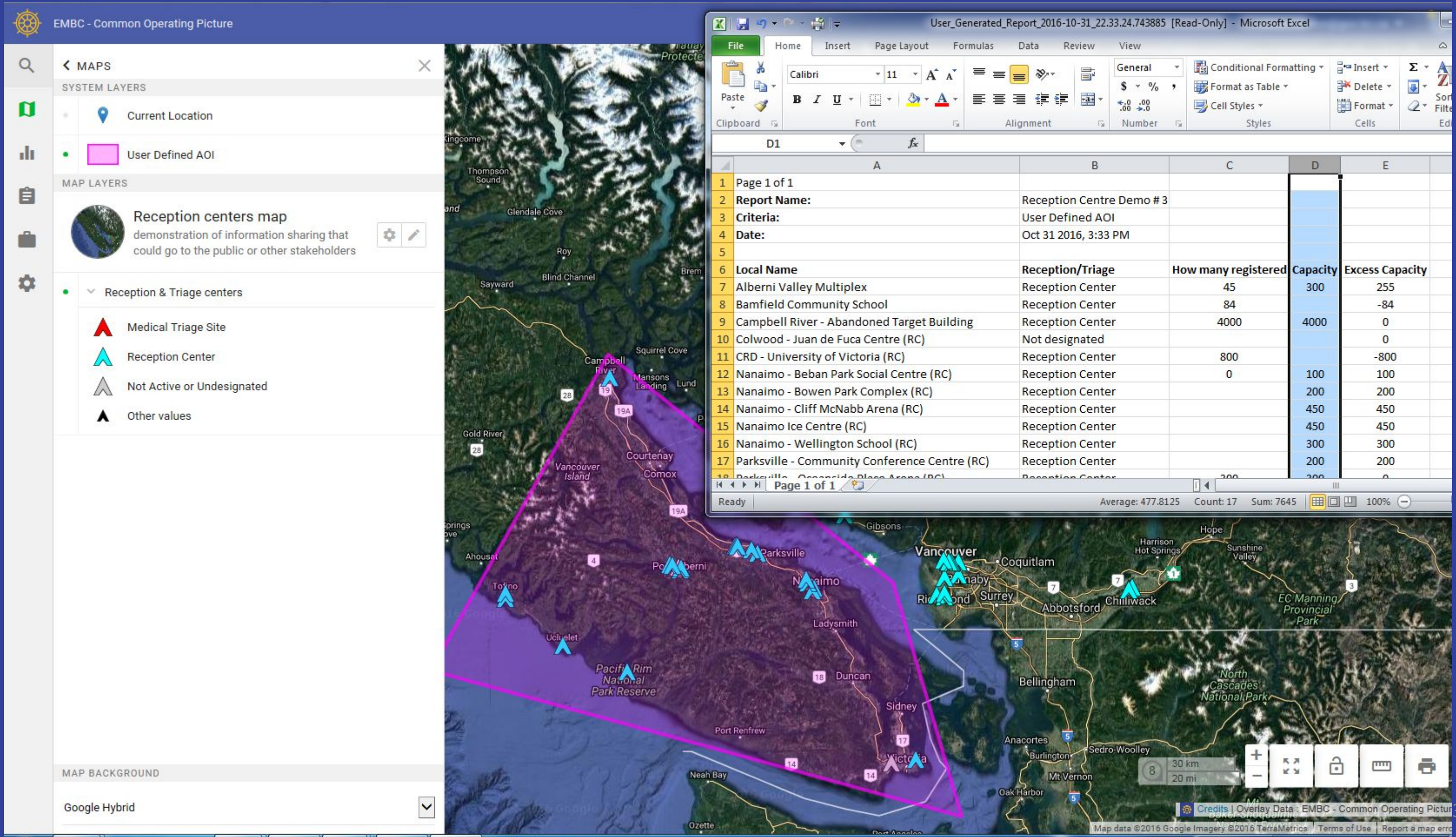
EOC in Port Alberni



Common Operating Picture



Reporting


EMBC - Common Operating Picture
MAPS
SYSTEM LAYERS
Current Location
User Defined AOI
MAP LAYERS
Reception centers map
demonstration of information sharing that could go to the public or other stakeholders
Reception & Triage centers
Medical Triage Site
Reception Center
Not Active or Undesignated
Other values
MAP BACKGROUND
Google Hybrid
User_Generated_Report_2016-10-31_22.33.24.743885 [Read-Only] - Microsoft Excel
Page 1 of 1
Report Name: Reception Centre Demo # 3
Criteria: User Defined AOI
Date: Oct 31 2016, 3:33 PM

Local Name	Reception/Triage	How many registered	Capacity	Excess Capacity
Alberni Valley Multiplex	Reception Center	45	300	255
Bamfield Community School	Reception Center	84		-84
Campbell River - Abandoned Target Building	Reception Center	4000	4000	0
Colwood - Juan de Fuca Centre (RC)	Not designated			0
CRD - University of Victoria (RC)	Reception Center	800		-800
Nanaimo - Beban Park Social Centre (RC)	Reception Center	0	100	100
Nanaimo - Bowen Park Complex (RC)	Reception Center		200	200
Nanaimo - Cliff McNabb Arena (RC)	Reception Center		450	450
Nanaimo Ice Centre (RC)	Reception Center		450	450
Nanaimo - Wellington School (RC)	Reception Center		300	300
Parksville - Community Conference Centre (RC)	Reception Center		200	200

Average: 477.8125 Count: 17 Sum: 7645
Campbell River
Courtenay
Comox
Vancouver Island
Port Alberni
Parksville
Nanaimo
Ladysmith
Duncan
Sidney
Victoria
Tofino
Ucluelet
Pacific Rim National Park Reserve
Port Renfrew
Vancouver
Coquitlam
Burnaby
Richmond
Surrey
Abbotsford
Chilliwack
Bellingham
Gibsons

What is the Future State?

- **COTS** – customization, integration
- **Hybrid systems** – will always be there
  - word docs, spreadsheets, contact databases, collaboration tools
- **Data aggregators** – connect COTS & Hybrid systems, facilitate sharing
- **Predictive tools** that use data aggregators to mine multiple systems
- **Interoperability and data exchange** (eg MASAS/CanOps)

Evaluation:

What is your local plan for communications?

- How does this mesh with other agencies / stakeholders?
- How will you scale to incorporate responders from out of region / province / country?

How do you plan to document and share information with other agencies / organizations?

How resilient & portable are these systems?

- Does your ability to respond / engage require that you go to the office to get the necessary equipment?
- If you are stuck at home or elsewhere, what systems are available to you?

Thank-you.

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