Situational Awareness and the Common Operating Picture

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Jonny Wright, Provincial Duty Officer (Communications)
Alberta Emergency Management Agency

2014 Stakeholder Summit
25 November 2014

Presenters - Context

- Steve Carr
  - With AEMA Operations since the fall of 2011
  - Involved in every POC elevation as POC Director
  - 22 years service with the Canadian Armed Forces (PPCLI)
- Jonny Wright
  - With AEMA POC since spring 2013
  - Significant experience with building daily media scans (assessment and analysis) for senior GOA officials
  - 20 years experience in shared situational awareness roles

- *BLUF – we don't have all the answers. What we offer is based on past experience, 'informed' opinion and personal perceptions…a bit of a theme*

<u>Outline</u>

- Some terminology & definitions

- Theory***

- Where we were in 2013 (AEMA / GOA POC)

- Where we are now in 2014

- Where we are going 2015+

- Conclusion / Discussion

- ***Significant reference: Dr. Robert MacFarlane and Mark Leigh, *Information Management and Shared Situational Awareness*, Emergency Planning College Occasional Paper #12, September 2014

Terminology & Definitions

- **Emergency** – An event that requires prompt coordination of action or special regulation of persons or property to protect the safety, health or welfare of people or to limit damage to property (*EMA* 2013)

- **Emergency Management** – The management of emergencies concerning all hazards, including activities and risk management measures related to prevention and mitigation, preparedness, response and recovery (*GEMR* 2007)

Terminology & Definitions

- **Crisis** - A time of intense difficulty or danger. An event that is, or is expected to lead to, an unstable and dangerous situation affecting an individual, group, community, or whole society. Characteristics include:
    - Sudden
    - Unexpected and/or unpredictable
    - Novel
    - Ambiguous
    - Complex
    - Volatile
    - Conflicting and/or competing objectives

Terminology & Definitions

- **Situational Awareness** – Knowing what has and is occurring within your environment and understanding the implications of these events and the potential outcomes associated with them. (*human element - intellectual*)

- **Shared Situational Awareness** - The common (shared) knowledge and understanding held by those involved in a situation that should support unity of purpose and effort, and in turn enable an effective collective response.

Terminology & Definitions

- **Common Operating Picture** – An overview of a situation that is created by assessing and fusing information from multiple sensors or sources to support timely and effective decision-making. (*a product of technology*)

SA & SSA ≠ COP

Situational Awareness

- Understanding of what has happened, what is happening and what may happen yet

- What are and may be the implications of the event?

- What are the second and third order effects? (collateral and/or cascading impacts)

- Direction and action taken and to be taken in the future

Situational Awareness

"There are known knowns. These are things we know that we know.

There are known unknowns. That is to say, there are things that we know we don't know.

But there are also unknown unknowns. There are things we don't know we don't know."

Donald Rumsfeld

Situational Awareness

- Largely about information management
  - Made significantly more difficult based on the inherent uncertainty that exists during a crisis, further compounded by organizational complexities (conflicting objectives)

$$IM \neq IT$$

- Making sense out of noise (data)
  - What matters depends on your viewpoint
  - Forest for the trees
  - Prioritization

More data ≠ More information

Situational Awareness
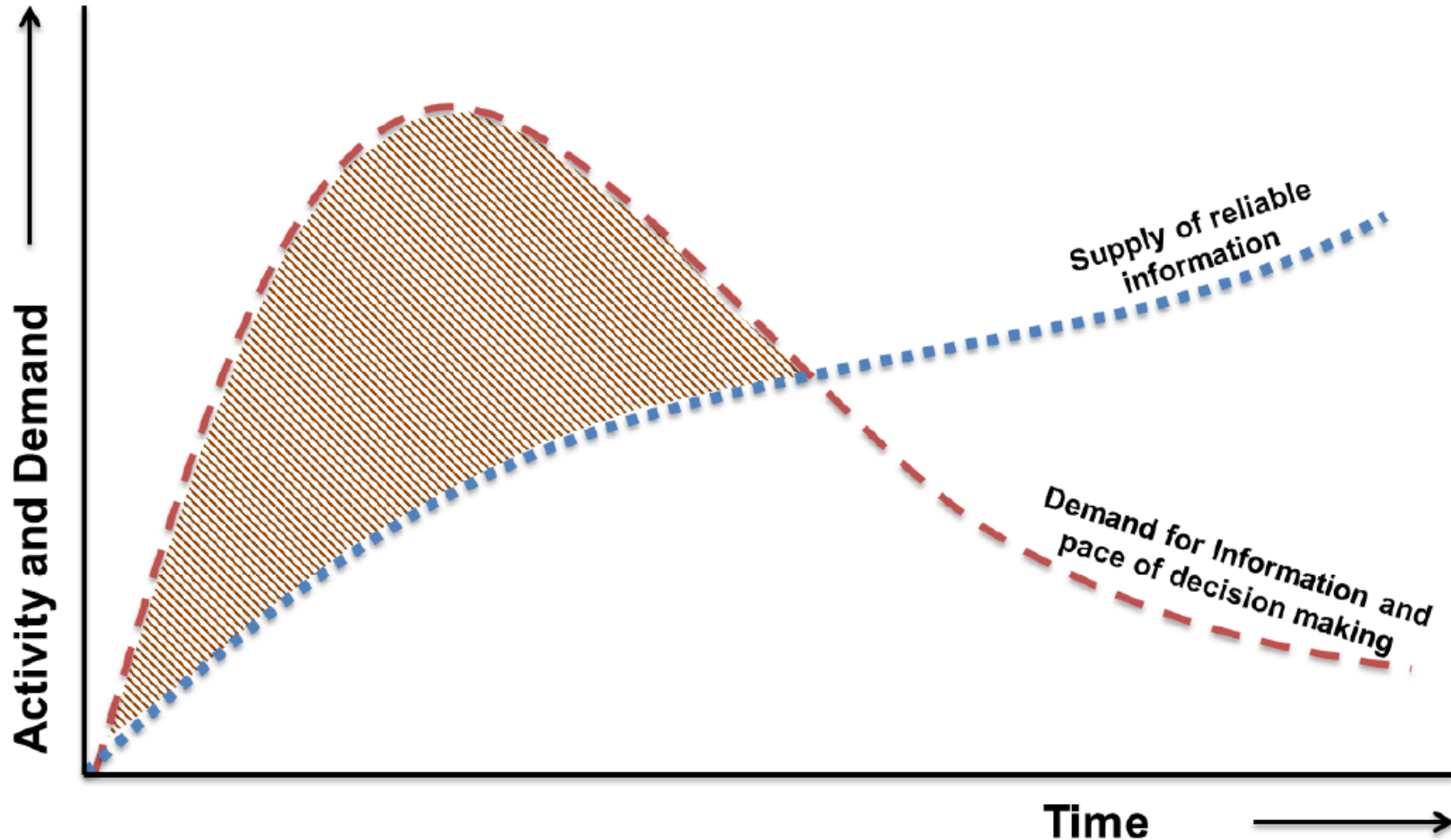
The Evidence Gap in Crisis Management – The period of greatest uncertainty

Government of Alberta
Alberta Emergency Management Agency

Situational Awareness

- Three levels of SA:

    1. Perception – building a complete picture of what is occurring at the event-level. Perceiving the critical factors in the environment. Purely reactive.

    2. Comprehension – developing an understanding of the event, what the critical factors mean and how they potentially impact the decision-maker's objectives. Largely reactive, commencing shift to proactive.

    3. Projection – the ability to construct a sense of what might occur in the future and what the implications of this could be. This can be done through modelling, scenarios or simulations. Proactive.

Shared Situational Awareness

- The conceptual objective of SSA is for all decision-makers and stakeholders to see the same situation in the same fashion…

- The reality is that while the information may be presented in a single fashion, it may still be viewed, interpreted or perceived differently by recipients
  - Individual needs
  - Select organizational or group requirements
  - Past experience
  - Doctrine, SOPs, language etc

- All can conspire to reduce the 'area' of common interest…

- Not all information needs to be shared

Shared Situational Awareness

- This does not negate the value of working towards SSA. It simply means actors need to understand those areas where common or shared objectives are found and focus the effort on these.

POC

EOC 'A'

X

ECC 'B'
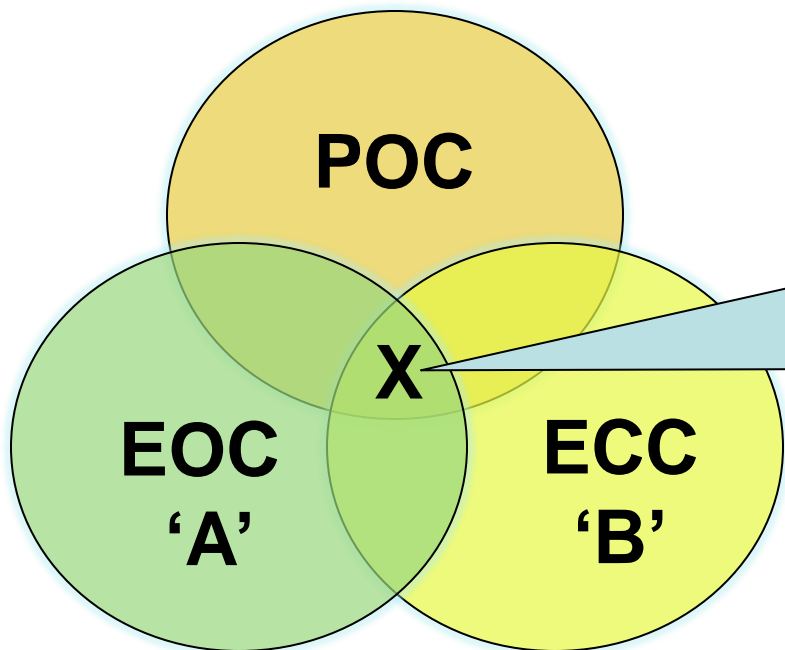
Build this SSA to focus decision-makers as they manage complex shared problems. Seek to reduce duplication of effort and achieve optimal 'efficiency of action'.

Common Operating Picture

- Variety of ways to contribute to or build SSA
  - Use of common IMS (doctrine, TTPs)
  - Clarity of language
  - Setting an operational rhythm
  - Regular meetings (face to face, video and telecon)
  - Reporting
  - Building a COP

- The COP is a 'product'

- Conveys geographic, spatial, textual, graphical data

- Whether it is static or interactive/real-time information, it serves as a 'point of reference' for achieving SSA

Routes around the Incident
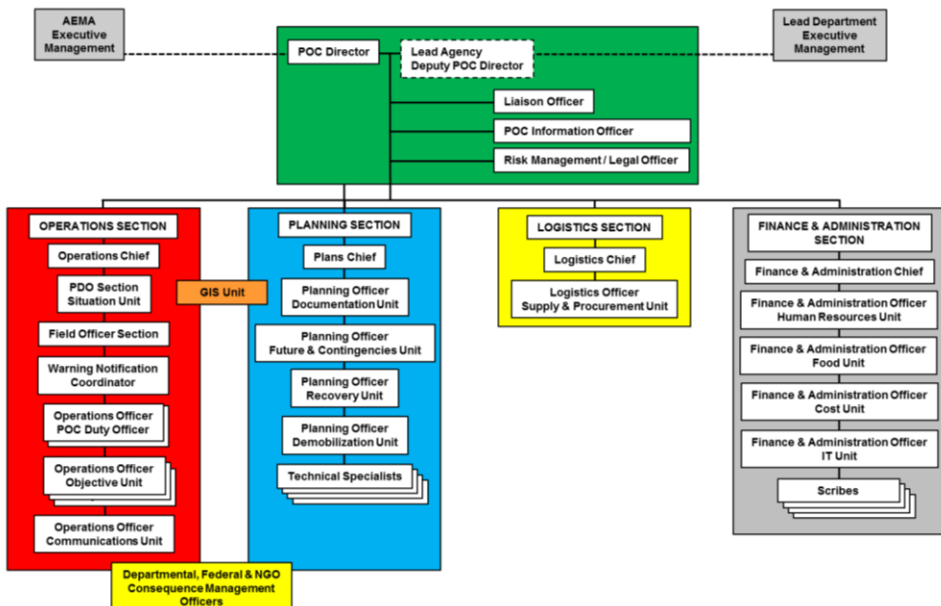
***POC Orientation Brief to all staff will commence at 1515hrs

Live Feed

1330hrs	26 Aug	Initial report received from CIC – unknown hazardous material release at industrial fire at 10026 – 46 Ave
1338hrs	26 Aug	FO contacted and directed to estb comms with City 'X' EMO
1354hrs	26 Aug	FO advises that City 'X' EOC has been activated. Fire on-site. Material TBC but cordon is being estb at 500m. Evacs likely within this area. Shelter in place recommended outside cordon.
1400hrs	26 Aug	POC Alert issued and POC elevated to L3
1403hrs	26 Aug	City 'X' issues CRITICAL ALERT on AEA
1425hrs	26 Aug	EOC SITREP 001 issued (see event document site)

Where We Were (2013)
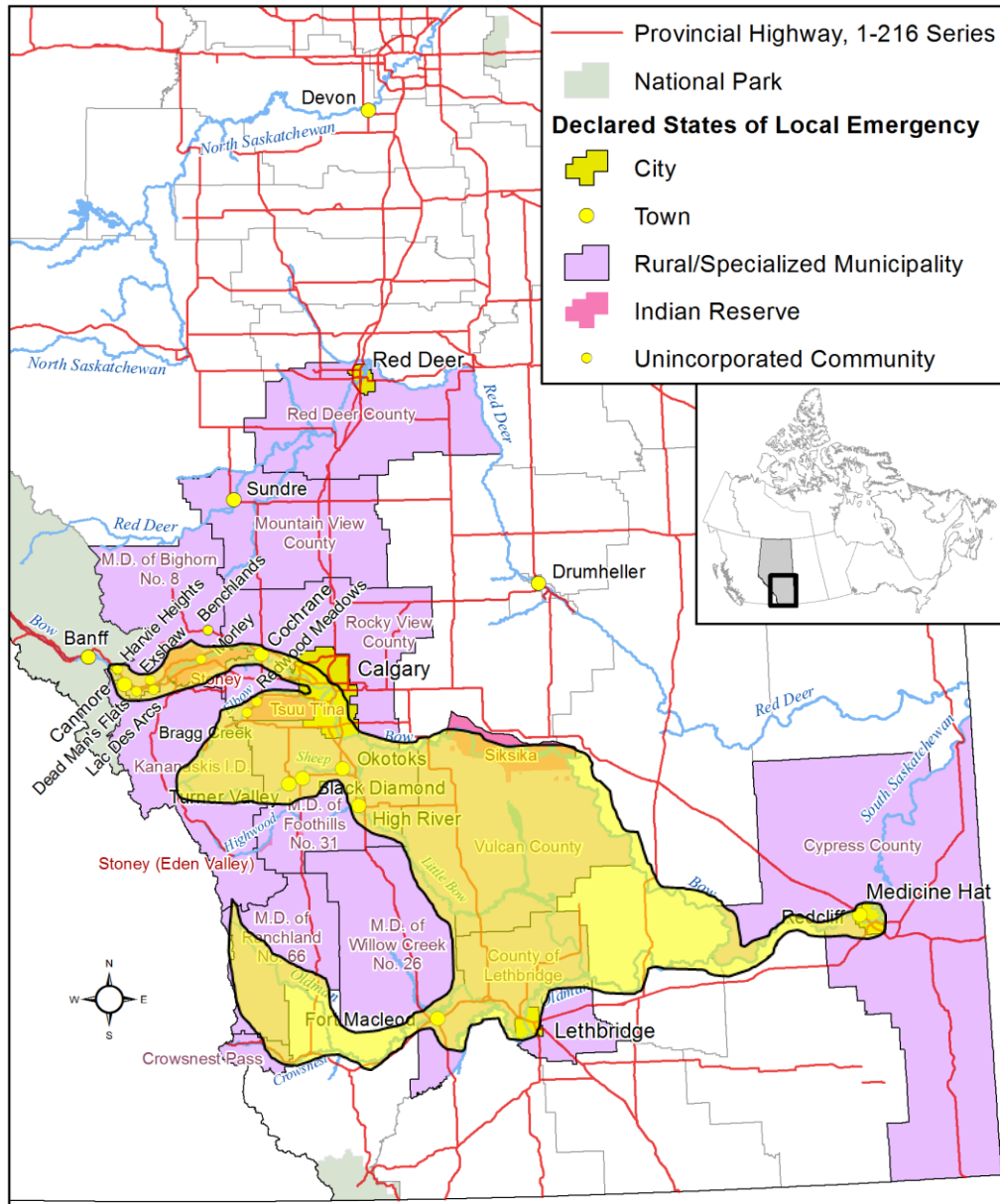
- Geographic area of ~ 55,000 km^2
- Total population ~ 1.6 million
- Urban and rural areas impacted
- Federal and provincial jurisdictions affected:
  - Federal national parks and three First Nations
  - Local authorities and provincially managed improvement districts impacted
- Event unfolded in two stages:
  - Initially in the West near the mountains
  - Two days later the river systems peaked in the East
- POC simultaneously coordinating mitigation, preparation, response, and stabilization operations

Where We Were (2013)

- POC elevated to Level 4 for 26 days (20 June - 15 July)
- More than 125,000 persons evacuated
- Approximately 14,500 homes impacted
- 1,100 small businesses (up to 20 employees) impacted
- Almost 2,700 Albertans displaced and requiring accommodations assistance
- GOA Request for Assistance to GOC results in the deployment of 2,200 Canadian Armed Forces personnel
- Immense infrastructure damage (over 900kms of road repairs required)
- Estimate 5 billion dollars in damage – 1.7 billion insurable (costliest disaster in Canadian history)

Where We Were (2013)

30 States of Local Emergency were declared by the following local authorities:

One Provincial State of Emergency for the Town of High River

• City of Calgary	• Town of Banff
• City of Lethbridge	• Town of Black Diamond
• City of Medicine Hat	• Town of Canmore
• City of Red Deer	• Town of Cochrane
• MD of Bighorn	• Town of Drumheller
• Clearwater County	• Town of Fort Macleod
• Municipality of Crowsnest Pass	• Town of High River
• Cypress County	• Town of Okotoks
• MD of Foothills	• Town of Pincher Creek
• ID of Kananaskis	• Town of Redcliff
• Mountain View County	• Town of Sundre
• MD of Ranchlands	• Town of Turner Valley
• Rocky View County	• Siksika First Nation
• MD of Willow Creek	• Stoney First Nation
• Vulcan County	• Tsuu T'ina Nation

O.C. 202/2013
JUN 28 2013

Province of Alberta
Order in Council

ORDER IN COUNCIL

Approved and ordered:

Lieutenant Governor

WHEREAS the Lieutenant Governor in Council is satisfied that an emergency exists in the Town of High River as a result of severe overland flooding and groundwater seepage from June 19, 2013 to June 25, 2013 triggered by extremely high streamflow levels, which caused extraordinary losses and damages to residents, businesses and others located in the Town of High River;

THEREFORE the Lieutenant Governor in Council declares that a state of emergency exists in the Town of High River.

CHAIR

For information only
Recommended by: Minister of Municipal Affairs
Authority: Emergency Management Act (section 18)

<u>Where We Were (2013)</u>

- Fighting for a picture as of 0230hrs 20 June
  - A 24-36hr 'Evidence Gap'
  - Limited ability to achieve 'boots on ground' (numbers, space and time, access)
  - Prioritization of information (overload)
  - Uncertainty
  - Lack of agility in SOPs (comms and reporting protocols)
  - Multiple locations with different objectives (near concurrent activity across four pillars)
  - Operational versus tactical
  - Action versus Coordination
  - Challenged by communications priorities (up versus down)
  - Lack of IT/GIS interoperability
  - Time lag in COP as a product

Where We Were (2013)

- Observations – Building better SSA
  - Requirement for more robust communications protocols
    - Internal to GOA
    - External to PS stakeholders
    - Plain, clear language
    - Affected and unaffected
    - Multiple means and methods
  - Shortfalls in our ability to directly support affected communities
    - Field Officer presence
    - Incident Management Teams
  - COP as a product
    - Static
    - Time-lag
    - Incomplete
    - Not shared

Where We Are (2014)

- Observations – Building better SSA
  - Requirement for more robust communications protocols
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• **Ongoing refinement of comms tools** • **Wider dissemination of updates (2014 floods)** • **Less rigid reporting lines**

  - Shortfalls in our ability to directly support affected communities
    - Field Officer presence
    - Incident Management Teams

• **Double size of field contingent** • **Encouraging regional IMT development**

  - COP as a product
    - Static
    - Time-lag
    - Incomplete
    - Not shared

• **Decision taken to identify (RFP) and implement a new incident management system**

Where We Are (2014)

- PSDSI was implemented as an interim POC incident management solution following the non-delivery of a purpose-built solution in 2010.

- PSDSI is based on SharePoint 2007 (not supported past summer 2015).

- PSDSI does little to aid in the development of SSA through the production of a COP for the GOA or the Public Safety system.
  - A logging tool with constrained search capabilities
  - Rudimentary task routing
  - No integrated GIS capability
  - Limited capacity for data-sharing outside the GOA
  - Highly restricted external access capability

Where We Are Going (2015+)

- AEMA is working to procure an incident management solution that supports the generation of a variety of information tools that include, but are not limited to:
  - Operational logs with comprehensive search function
  - GIS products
  - Situation and status reports
  - Task routing, tracking and associated cost capture functions
  - Communications and imagery products.
- Ideally these can be displayed in the POC or disseminated internally or externally in a fashion that creates a COP – a product.
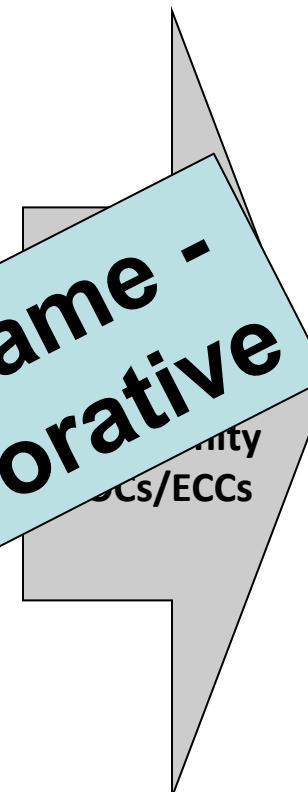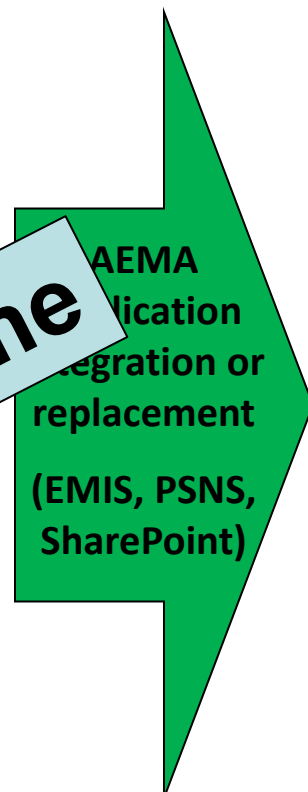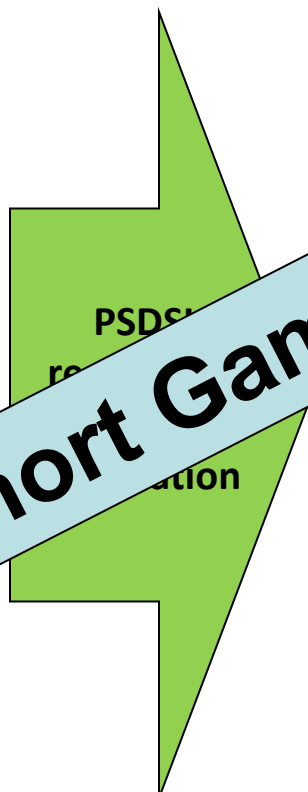
Where We Are Going (2015+)

Capabilities		Interim Outcomes		Objective
Ability to easily and quickly provide information updates	→	Increased usage of POC Coordination Application	→	Increased timeliness & effectiveness of action planning and decision-making
Ability to search and extract information in a timely manner		Duplication of effort eliminated		
Ability to seamlessly share event and incident information with partner agencies, municipalities, communities, and other identified stakeholders		More effective use of resources		**Achieved through improved SA and SSA**
(Near) Real-time communication of the COP during incidents and events		Minimized manual intervention or translation of input information, from other agencies and applications in the development of the COP		
Ability to easily prioritize, find, sort and analyze incident and event information		Efficient and compliant response to FOIP requests and legal reviews		
Ability to easily access other AEMA and GOA Ministries' applications		Optimized identify incident and event information for future reviews		
Ability to easily access and use the POC application both from within the POC and from external/ remote locations				
Ability to access and use the POC application 365 X 7 and 99.99% of the time.				

Where We Are Going (2015+)

Spring 2015

New POC Application implemented & operating parallel PSDS

Summer 2015

PSDS replication

Fall 2015

AEMA application integration or replacement

(EMIS, PSNS, SharePoint)

2016

Intelligence sharing with Partner Agencies

2017

Integration with ...

... ... munity OCs/ECCs

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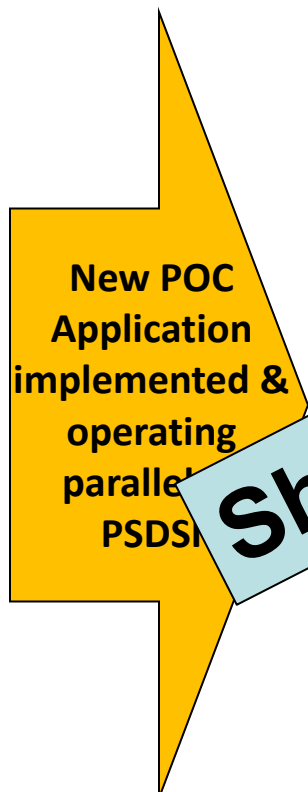
Short Game

Long Game - Collaborative

Challenges / Discussion Points

- Operational (POC) vs tactical (ECC/EOC) needs
- Not a 'one size fits all' exercise
- COTS with configuration vs customization ($$$)
- Restricted or tailored views
- Ensuring a two-way portal
- Privacy issues
- Other??

Conclusion

- A product can aid but only so far…

- It is about a mindset as much as anything

'Dare to Share'

Don Randall, MBE
Chairman Griffin National Executive