

# Mapping Emergencies:

## 9-1-1 to the EOC

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and  
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The Changing Face of  
GIS – URISA Workshop  
Oct. 29, 2009

# Overview

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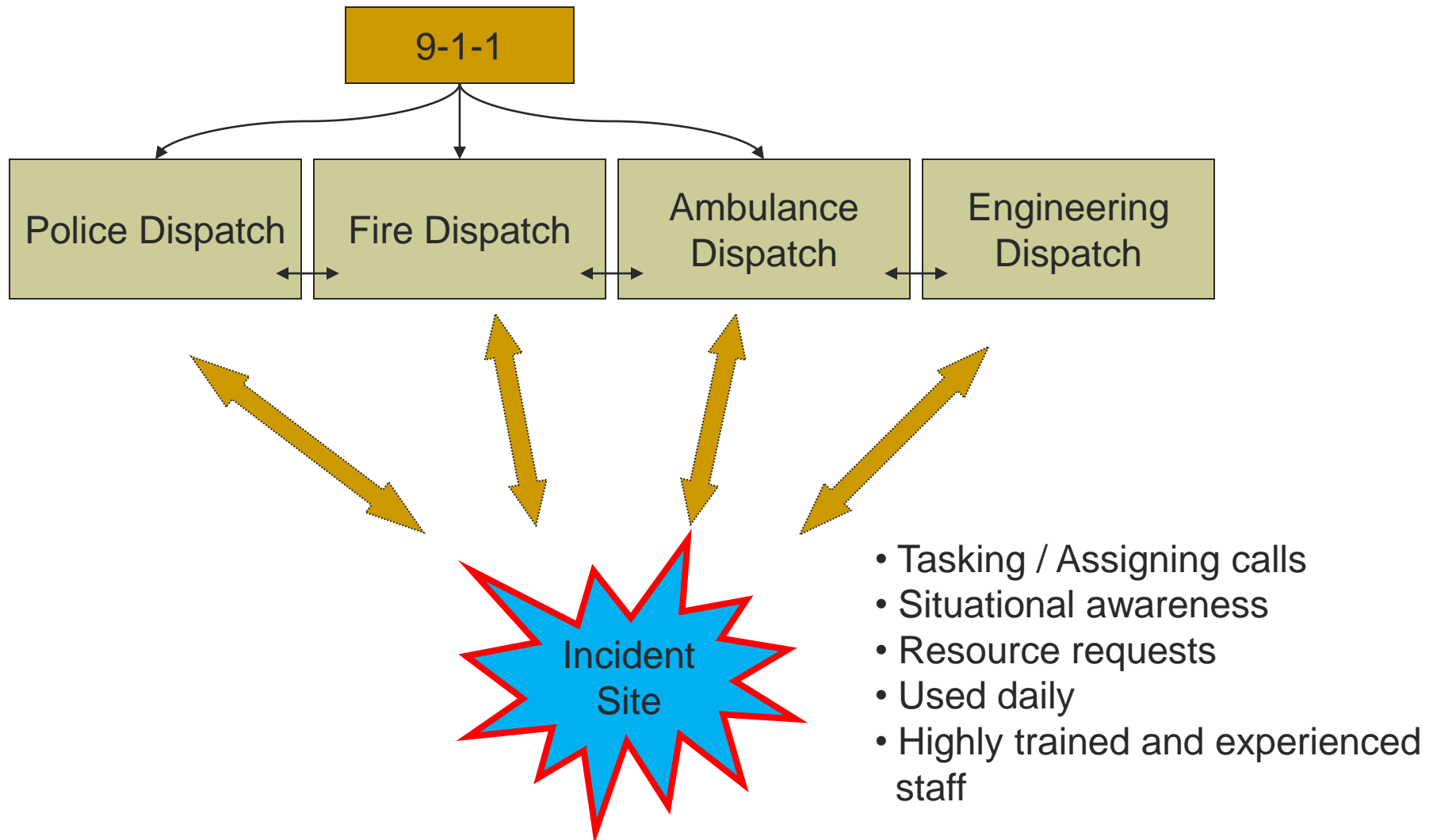
## ■ The Challenges

- Creating a real-time Common Operating Picture (COP)
- Alerting key CI owners of emergencies

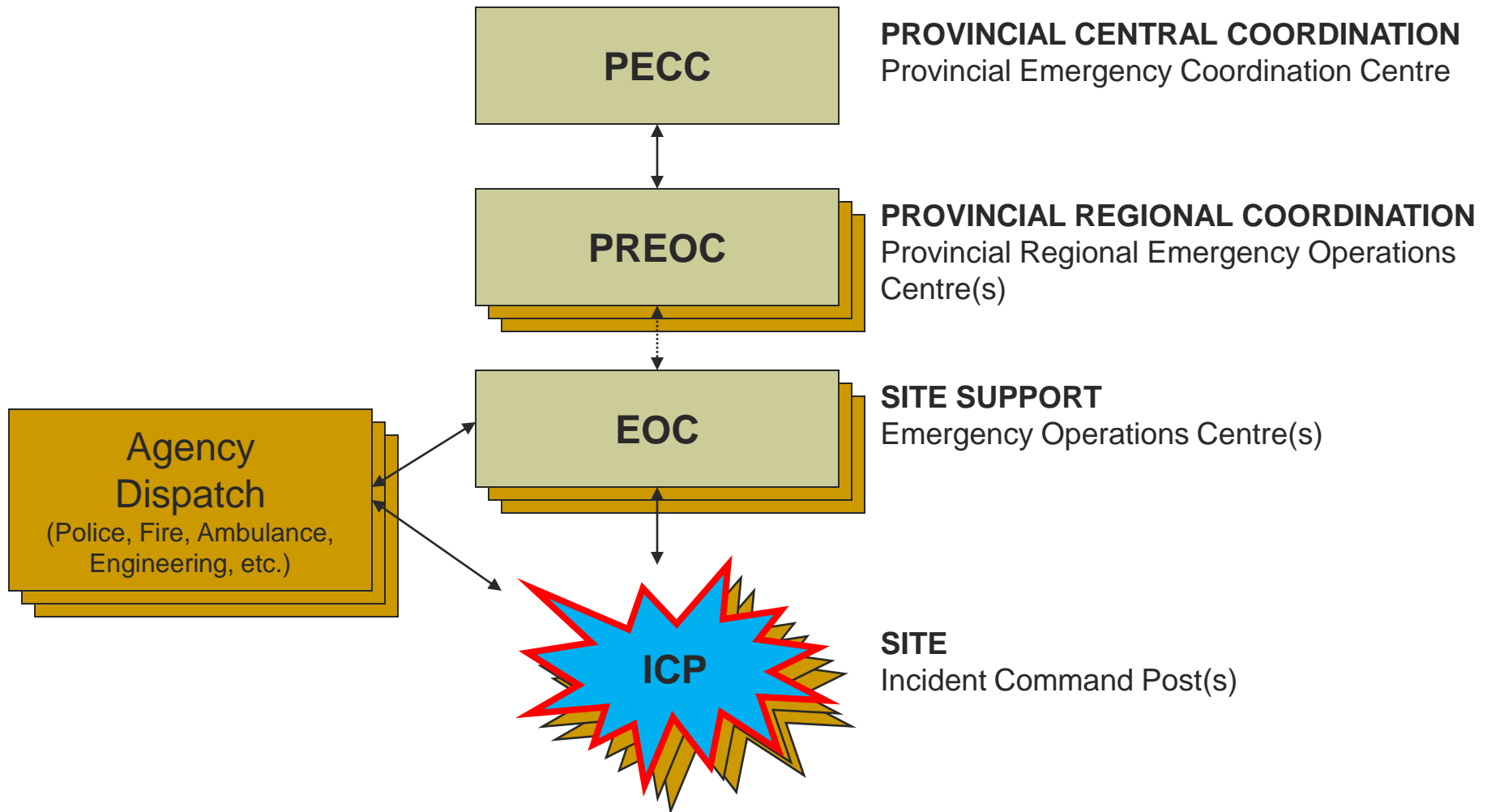
## ■ The Solution

- Integrate a number of applications using an open geospatial platform

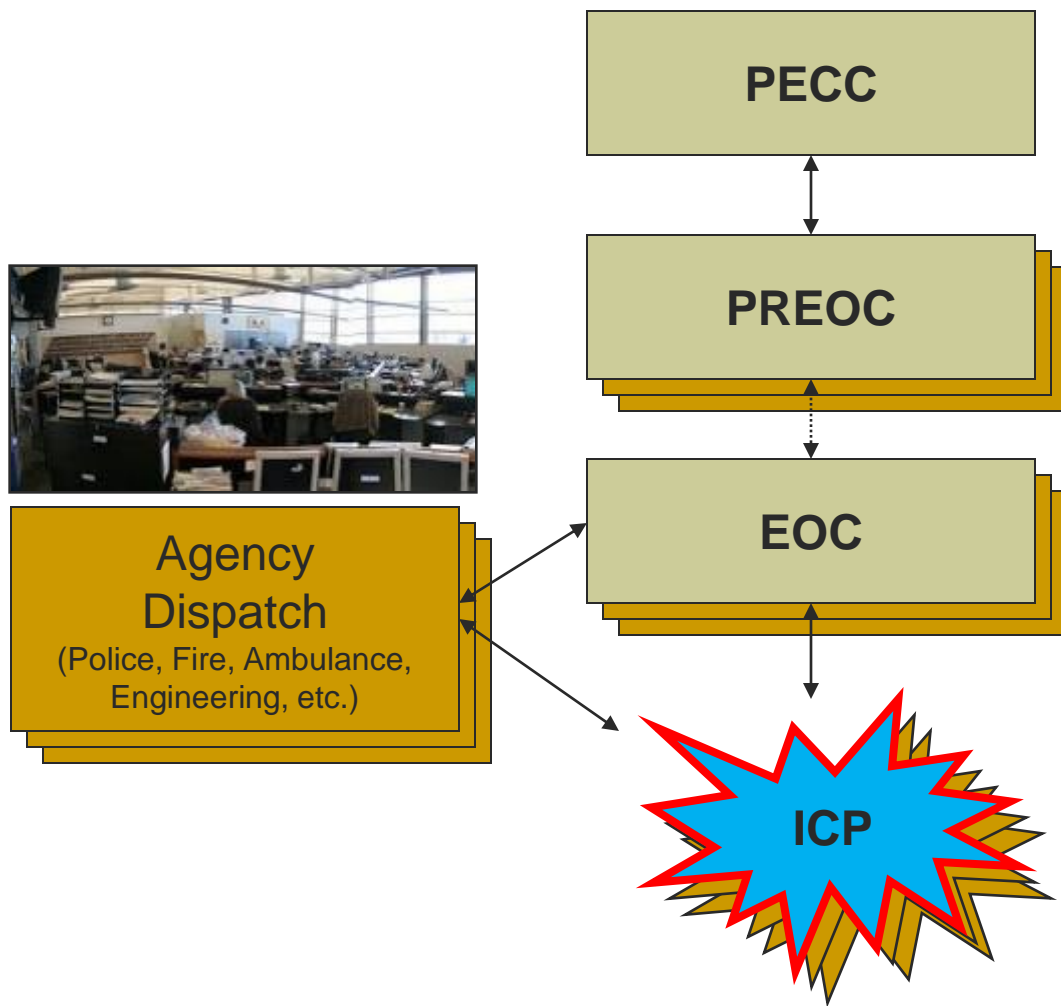
# Day-to-day



# Emergency Management in BC



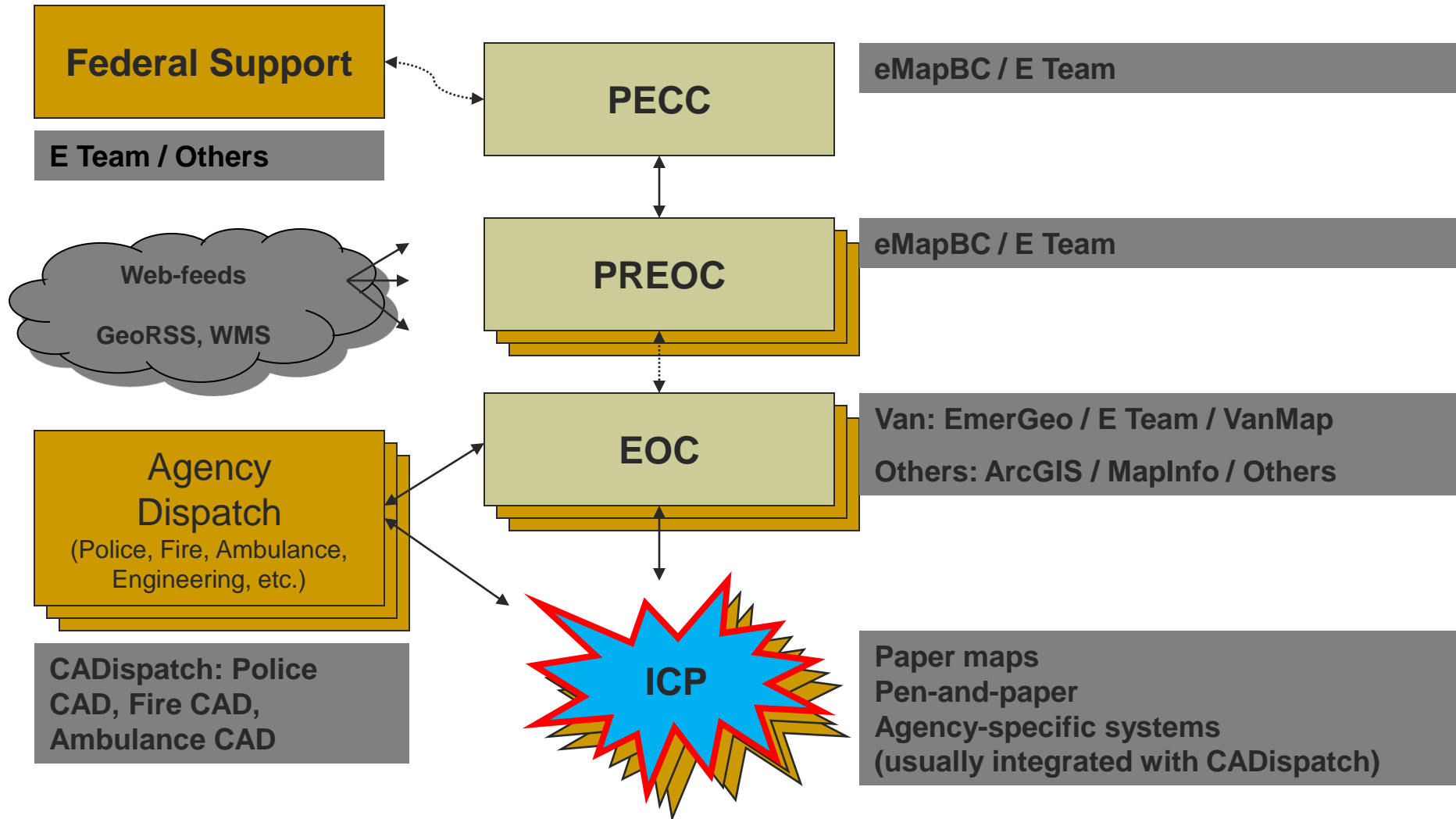
# Emergency Management in BC



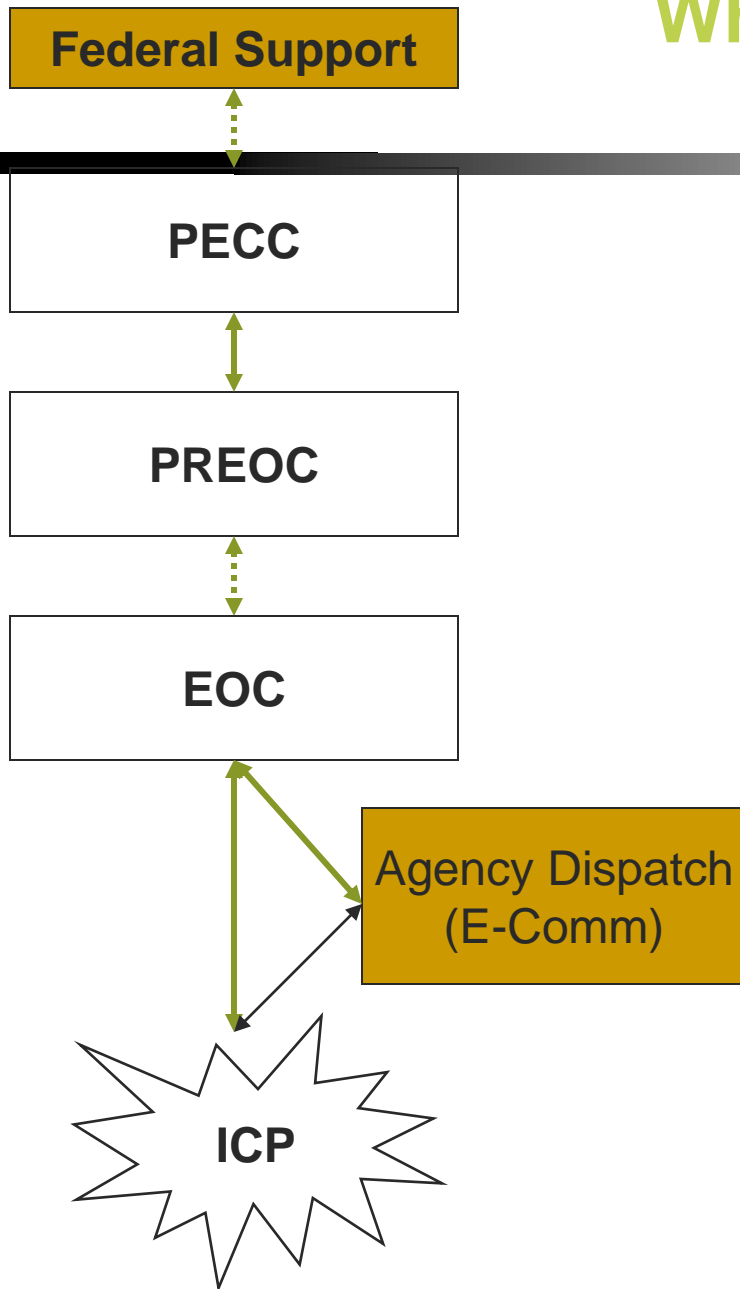
# When is this all used?



# Geospatial Incident Management Systems



# What are we dealing with?



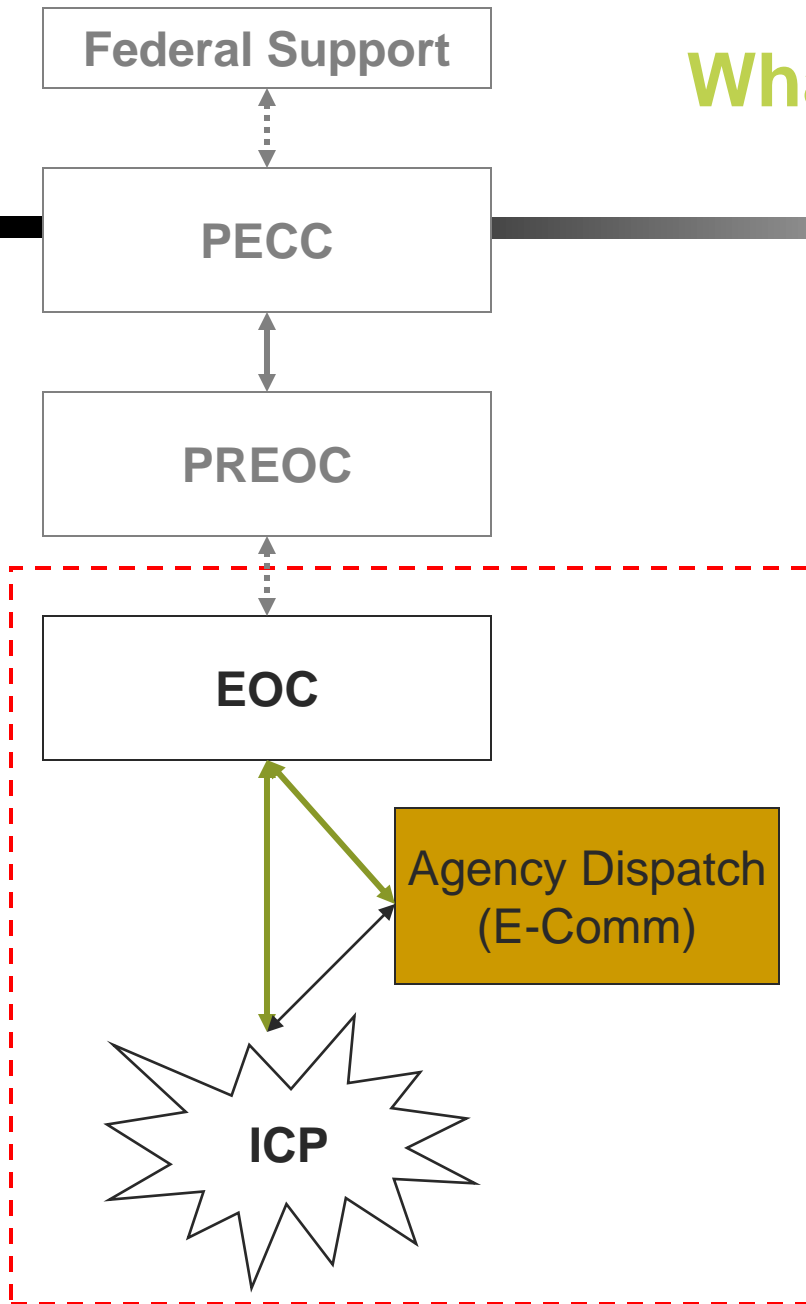
## Data

- File-based data (e.g. SHP, DWG, KML)
- Database Systems (e.g. Oracle Spatial)
- Proprietary GIS (with no export functions)
- Electronic paper maps (e.g. PDF)
- Paper-based maps

## Data Transfer

- E Mail
- FTP
- Fax
- Hardcopy
- Some web-based UIs

# What are we dealing with?



## EOC Geospatial Systems

- EmerGeo (mapping)
- E Team (information system)

## Incident Command Post and Agency Dispatch (through E-Comm)

- Police CAD
- Fire CAD
- Ambulance CAD

## Integration Between Systems

# The challenge from the City's perspective

- ▶ Develop a real-time common operating picture
  - Three disparate systems
    - ▶ Police, Fire, Ambulance Dispatch Systems feed **E2MV Application**
    - ▶ EOC Logging and Communications Software (**ETeam**)
    - ▶ EOC GIS Mapping Software (**EmerGeo**)
- ▶ Key CI owners/operators not in notification circle.

# **E-Comm 9-1-1**

Emergency Communications for  
Southwest British Columbia Incorporated



**HELPING TO SAVE LIVES AND PROTECT PROPERTY**

## The E<sup>2</sup>MV Solution

**Integrating data from multiple dispatch systems**

# E<sup>2</sup>MV

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- What is E-Comm?
- What is E2MV
- What challenges does it solve?
- Lessons Learned
  - Multiple disparate systems
    - Police
    - Fire
    - Ambulance

# E-Comm

- 9-1-1 PSAP
- Wide-Area Radio System
- Emergency Dispatch
- Public Safety Technology Support



Stanley Cup Riot – Vancouver- 1994

# GIS @ E-Comm...

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## ■ GIS Data and Services

- Computer Aided Dispatch (CAD)
  - E-Comm Fire CAD (Intergraph)
  - PoliceCAD (Versaterm)\*
  - BCAS NetCAD (Intergraph)\*
- Records Management Systems (RMS)
  - PRIME-BC (Police) \*
  - Project Fires

\* Province-wide support

# Operations ... Lack of a C.O.P.

The screenshot displays the VDX MapViewer interface for Vancouver Police, dated 2007-Sept. The main window shows a map of Vancouver with a grid of streets and several dispatch points marked with icons and numbers (e.g., 30318, 30314, 30313, 30312, 30316, 30315, 30314, 30315, 30316, 30317, 30318, 30319, 30320, 30321, 30322, 30323, 30324, 30325, 30326, 30327, 30328, 30329, 30330, 30331, 30332, 30333, 30334, 30335, 30336, 30337, 30338, 30339, 30340, 30341, 30342, 30343, 30344, 30345, 30346, 30347, 30348, 30349, 30350, 30351, 30352, 30353, 30354, 30355, 30356, 30357, 30358, 30359, 30360, 30361, 30362, 30363, 30364, 30365, 30366, 30367, 30368, 30369, 30370, 30371, 30372, 30373, 30374, 30375, 30376, 30377, 30378, 30379, 30380, 30381, 30382, 30383, 30384, 30385, 30386, 30387, 30388, 30389, 30390, 30391, 30392, 30393, 30394, 30395, 30396, 30397, 30398, 30399, 30400). The interface includes a menu bar (File, View, Help), a toolbar with navigation and search tools, and a status bar at the bottom showing the current time as 14:51:05 PM. The map is titled "Map View (2.26 km) - [Total: 29]" and the main window is titled "Intergraph - I/Dispatcher [ecm1949] - [Map View (3.49 km) - [Total: 22]]".

# Providing the C.O.P...

- Our Solution for Public Safety



*Emergency Event Map Viewer*

# E<sup>2</sup>MV Project Vision...

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- Import information from multiple CADs
- Browser-based mapping application
- Display of active events
- Role-based access
- Event Management
- Event (data) Services

# Why E<sup>2</sup>MV?

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## ■ Operational Benefits

- Demand Mitigation
- Situational Awareness
- Interoperability
- CAD (Event Management) Backup

## ■ Technical Benefits (future potential)

- Single geographic display of CAD information, regardless of CAD vendor.

# User Needs Assessment

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## ■ UNA

- Identify user requirements
  - Discuss and assess the needs of users
  - Take into account user:
    - Ideas
    - Attitudes
    - Wants, and
    - Preferences
- Relevance to / Integration with other initiatives
  - Emergency Management BC
  - Integrated Security -- 2010 Winter Olympics
  - Ministry of Forests – Fire Management Section
  - Emergency Operation Centers

# E<sup>2</sup>MV Technology...

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## ■ Technical Platforms

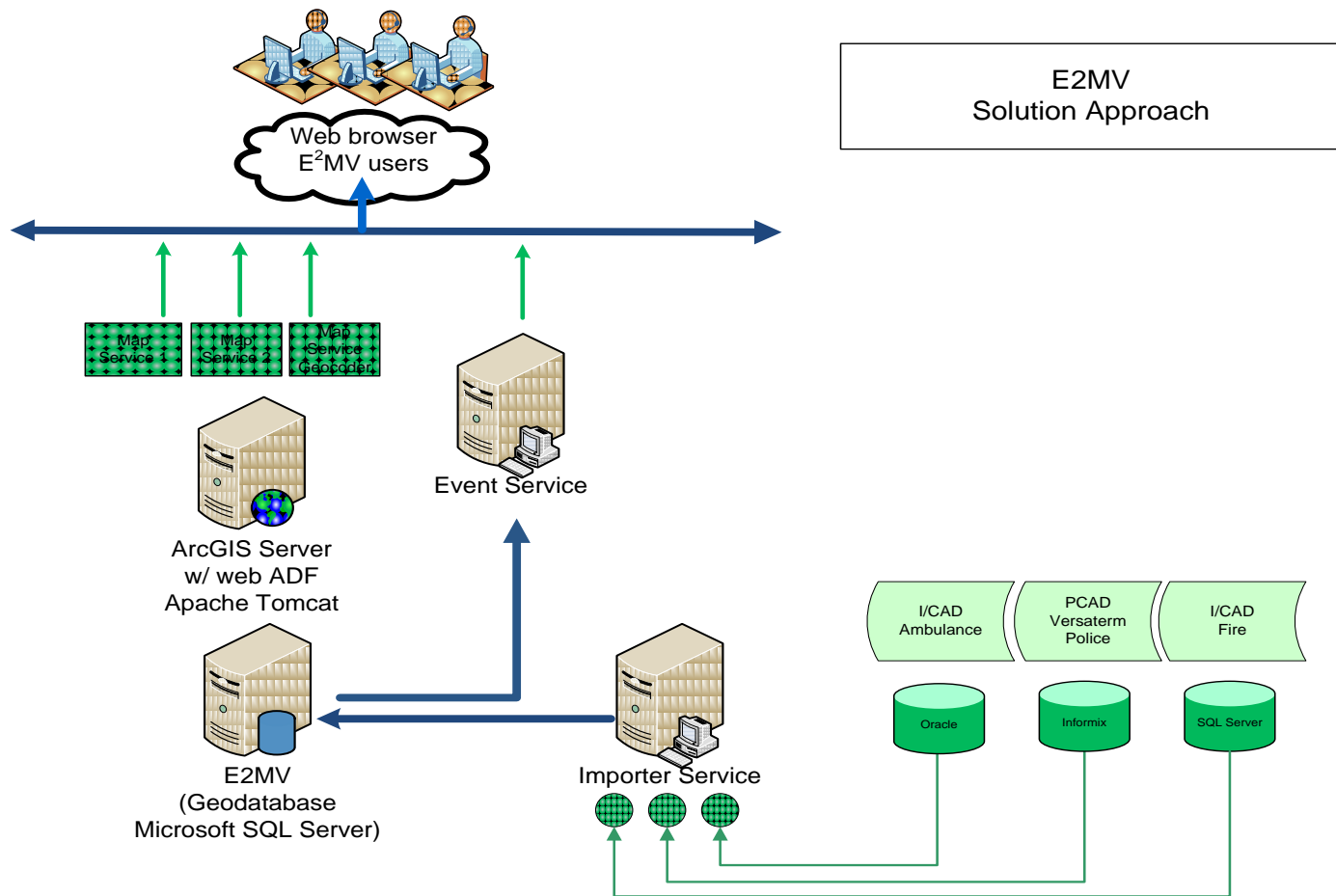
### – Server Platform

- Windows Server 2003 on VMWare
- ESRI's ArcGIS Server Standard, Enterprise
- SQL Server
- Flex API (ActionScript)

### – Client Platform

- Windows XP/Vista
- Standard Browsers with Flash Plug-in

# Solution Diagram



# E2MV... a reality

**Emergency Event Map Viewer**  
E-Comm 911  
Current Action: Re-center Map

**E2MV Status** [Right Arrow]

**Browse Events and Units**

Show on Map:  
 Events  Units  Labels  
 Closed Events

Filter Events: [Search Box]

- 092020069 - FIRE\_ICAD - WILD1
- 092020110 - FIRE\_ICAD - ALRM3
- S091490001 - FIRE\_ICAD - F29B4
- VA09000123362 - PRIME - SPAT
- VA09000126244 - PRIME - INTELL
- VA09000126138 - PRIME - DISTB
- VA09000126275 - PRIME - SCREAM

**Event Details:**

- system-id: VA09000126228
- type-comment:
- dispatched-to:
- status-description: Pending
- agency-name: Vancouver Police
- source-system: prime
- location: 1211306.07711317, jstone 478304.22849879
- comment:
- address: 300 BLOCK GORE AVE
- call-time: 2009-07-21 13:35:11 (-0700)
- priority: 3
- type: ASSDA
- status: P
- station:
- secondary: false

Map Labels: Stanley Park, Stanley Park Causeway, Stanley Park Dr, Pipeline Rd, Kinglet Trail, Rawlings Trail, Lees Trail, N Lagoon Dr, Lost Lagoon, Lagoon Dr, Second Beach, English Bay Beach, Coal Harbour Park, Harbour Green Park, W Pender St, Robson St, Alkali St, Denman St, Nelson St, Davie St, Pacific St, Hornby St, Homer St, Pacific Blvd, Terminal Ave, Cordova St, Powell St, E Hastings St, Venables St, Malkin Ave, Strathcona Park, Whyte Ave, Chestnut St, Kitano Beach, Kitsilano Park, Kitsilano Lake, Clark Dr, Evans Ave, Headley Ave.

Scale: 1 km, 0.5 mi

POWERED BY ESRI

# E<sup>2</sup>MV – Interfaces to beyond...

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- Filtered event and unit data
  - depending on who/where request is generated
- Produces resultant Restful web service to be consumed by third party
  - Rest... Restful
  - Token-based pulls (GET)
  - The endpoint can be bookmarked and queried
  - The URL is very simple (english)
  - The service can return XML or JSON data

# E<sup>2</sup>MV – what's beyond...

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- Data Sharing to other initiatives
  - EOCs,
  - GeoConnections – MA SAS
  - EMBC - EMIS
  - Ministry of Forests (Fire Management Section)
  - Integrated Security Unit for 2010
- Single CAD Viewer (E<sup>2</sup>MV)
  - Multiple CADs... single Map and address verification

# E2MV – Lessons Learned

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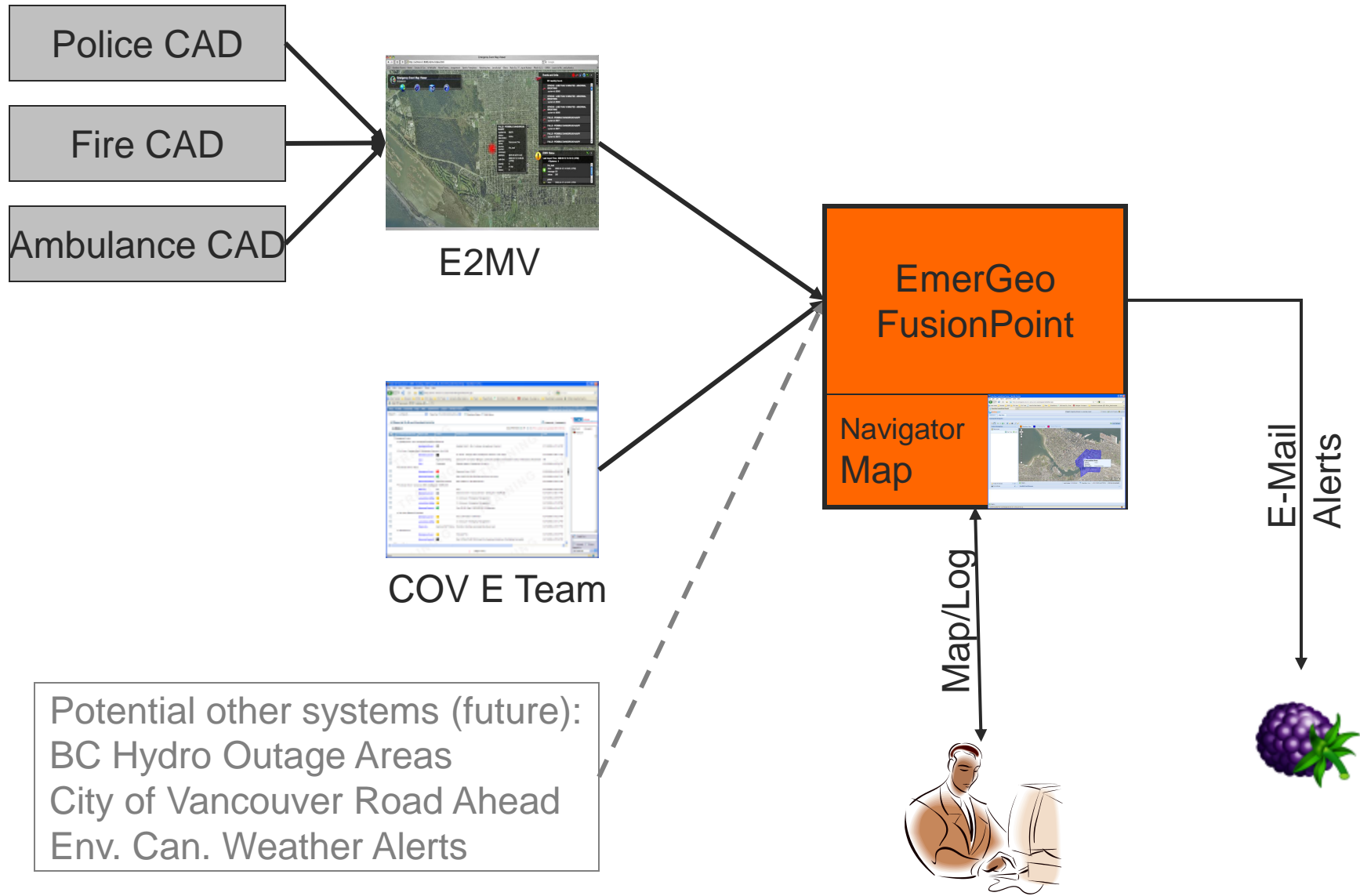
- Get ready to hit the pavement
  - Data Sharing Agreements
    - Am I a lawyer?!?
  - Alleviating concerns
    - Security
  - Creating awareness

# The next steps – CI Alerting

- ▶ Alerting Critical Infrastructure (CI) owners of incidents that will potentially impact their facilities
- ▶ Many CI owners/operators are not at their facilities and have no way to be notified if emergencies have potential to impact their services



# CI Alerting



- Situation Data
- Incidents
  - Fire - Structure
  - Fire Suppression
- Operations
  - Evacuation Areas
  - Hazards
- Planning
  - Vulnerabilities
  - Critical Infrastructure
  - Public Places
- Other
  - Imagery
    - 2008 City of Vancouver Imagery
    - BC Imagery (MapBC WMS Ser
    - 2010 Olympics Layers
    - Transportation



CI Location, Contact Info

Live incident from Fire dispatch system (via E2MV)

# Projects

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- **E2MV**

Lead: E-Comm

Funded in part by GeoConnections

- **Integrating Situational Awareness**

Lead: City of Vancouver Office of Emergency Management

Funded in part by GeoConnections