



Communications Interoperability in Disaster Relief/Crisis Situations

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The Problem

- Disaster response communications interoperability remains serious issue
- Hurricanes Katrina and Rita again exposed the issue and validated more effort required to correct
- Responding agency communications systems do not easily interoperate



Assumptions

- Basic civilian communications infrastructure such as wired telephone and cellular service may be severely disrupted or even eliminated for a significant period of time during the critical initial hours of a disaster response.
- Voice communications restoration generally has the highest priority.
- Data networks may be severely degraded to non-existent
- Reliance on web-based collaborative planning applications may not be feasible if network is not functioning
- Each agency will bring current inventory communications system to the disaster.



Problems

- Communications interoperability during a major incident or natural disaster is a 3-dimensional issue.
 - 1) Unfamiliar equipment,
 - 2) Inadequate training, and
 - 3) Inability to link existing legacy systems.



Interoperability Options

- Common RF networks
- Move to web-based applications
- Common reporting standards
- Bandwidth usage



SentryPoints Key System Requirements

- Provide Real-Time Common Operation Picture (COP)
- Provide seamless digital messaging across any available communications infrastructure
- Provide Command and Control (C²) features for the Emergency Operations Center (EOC)
- Provide Integrated C² for All Responders, All Disciplines, All Relevant City Resources

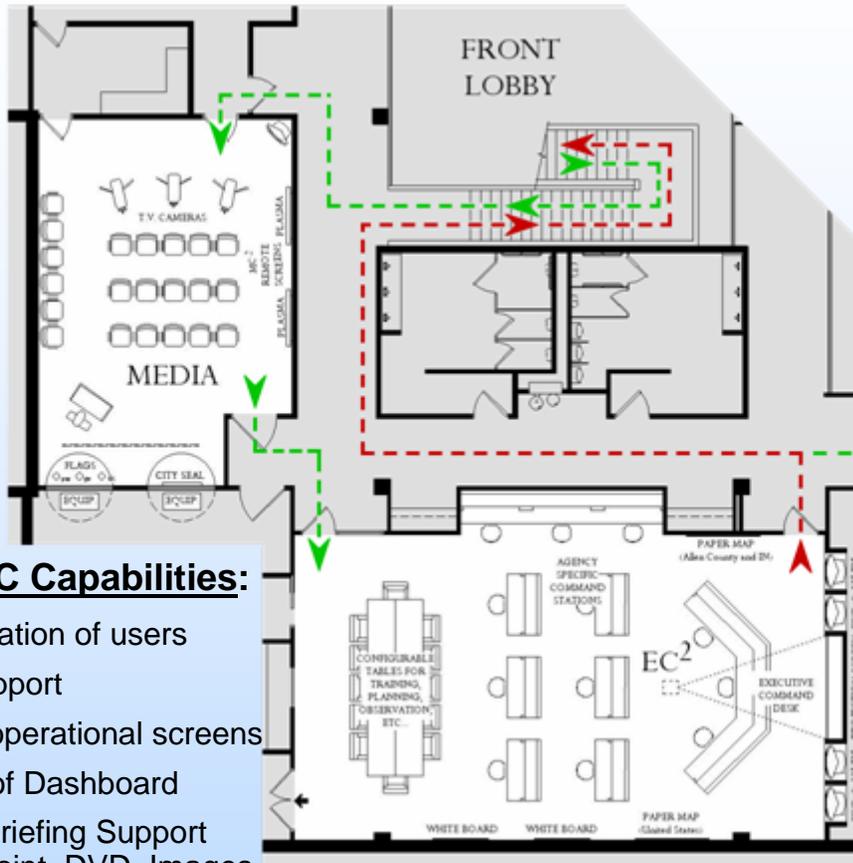


Key Operational Features

SentryPoints Solution Provides:

- Real-Time Situation Awareness
- Real-Time Field Asset Management
- Tasking – Across Disciplines
- Messaging – Across Disciplines
- Data Compilation – Across Disciplines
- Intra and Inter – Agency Coordination and Training
- Operations Journal with Replay
- Delivers Critical Site Information: Images, video, site and building plans

SentryPoints Usage in an EOC



Enhanced EOC Capabilities:

- Remote Observation of users
- A/V Briefing Support
- Access to ALL operational screens
- Active CLONE of Dashboard
- Full Spectrum Briefing Support (Video, PowerPoint, DVD, Images Files...)
- Space for STATUS BOARDS
- Space for Print and Electronic Media

SentryPoints Capabilities:

- Executive “Dashboard” provides access to integrated operational information
- Access to all operational screens from Agency Operation Centers
- “Real-Time” Tracking Data
- “Zoom” Access to State, Regional, Area and Local Command Centers
- Integrated GIS support
- Operational Overlays
- Integrated “Image Notes”: (snap shots, aerials, text, plans...)
- Archiving and Replay
- Collaborative Planning with other Centers
- Training and Exercise Control
- Multiple Communications Means
- Dispatch Center for Federal Collaboration
- Research Site for Procedure Development
- Legacy Integration



Fort Wayne Executive Command Center

(ACTUAL)





Executive Dashboard

File Edit View Go Bookmarks Tools Help

http://fourddev.com/gexec/dashboard.html

Executive Dashboard

Tuesday, April 12, 2005 15:32:43

THREAT ADVISORY

ELEVATED

Significant Risk of Terrorist Attacks.

9-1-1

- Shooting Death** Tue Apr 12
W Colliseum and Coldwater
- Auto Accident** Tue Apr 12
Covington and Getz
- Attempted Bank Robbery** Tue Apr 12
National City, Downtown
- Shooting** Tue Apr 12
Stardale and Waverne

Situation Map

[Map](#) - [Satellite](#) Hot!

3-1-1

- Snow Day** Tue Apr 12
Allen County Schools
- Severe Weather Advisory** Tue Apr 12
Allen County
- Boil Water Advisory** Tue Apr 12
Aboite Township
- Water Main Repair** Tue Apr 12
Elwood Road

Simulation Control

Log Points

Crisis Management

Threat Vulnerability Assessment

3-1-1

Email

- City Clerk** Tue Apr 12
Meeting Request
- News Sentinel** Tue Apr 12
Press Release
- Street Dept** Tue Apr 12
Ardmore Truck Route
- City Council** Tue Apr 12
Public

News Feeds

Local

State

Federal

Live



Mayor's Dashboard -- Local News - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://127.0.0.1/local.html

Mayor's Dashboard — Local News

The Journal Gazette:

Weekend wrecks kill 2 children, 19-year-old Ohio border area site of both crashes

Two children and a 19-year-old man died in separate crashes in Williams County, Ohio, late Saturday and early Sunday morning, Ohio police said.

Wishbone come true: Bluffton gets new pet shelter
Backers catch the scent after terrier's tale

BLUFFTON - Bluffton residents can thank a dog named Wishbone for the new animal shelter building that opened Sunday at 161 W. Cherry St.

Topix News:

IPFW, sports supplier find French connection

Pete Fosnough knows the French like tennis. After all, they refined the sport that traces its roots to the early Egyptians.

Fort Wayne police testing handheld translators

Handheld devices that translate police commands from English into other languages is receiving rave reviews from officers testing them.

Gov.-elect Daniels' early choices reflect lack of diversity

It's still early, of course, but so far Gov.-elect Mitch Daniels' major appointments haven't been particularly diverse.

The News-Sentinel:

Booster shot eyed for pertussis cases

Incidence of the disease, also known as whooping cough, has doubled statewide since 2003 and is up fourfold in Allen County.

A significant rise in pertussis, (whooping cough) cases, locally and across the nation, has public health officials closely examining the reasons and considering a booster shot for adolescents and adults.

(By Jennifer L. Boen, jboen@news-sentinel.com, 12/20/2004 09:00 AM EST)

A column by Lou Henry

Birthday wishes take a long trip

WANE: News Channel 15

Officials Announce Plans on How To Pay for New Colts Stadium

Indianapolis mayor Bart Peterson says the city of Indianapolis will ask the general assembly to approve pull-tab legislation to help pay for a new stadium for the Colts.



St. Francis Fans Support Team

(Fort Wayne, WANE, Dec. 19, 2004) -Although the University of St. Francis football team suffered a disappointing loss in the NAIA National Championship game, they didn't lose the loyalty of their fans.

Amish Crash an Eye Opener?

(Fort Wayne-WANE-December 17, 2004) - A crash that killed three Amish people riding in a

FortWayne.com News:

Pair of blasts kill 62 Iraqis

3 vote workers gunned down in Baghdad

BAGHDAD, Iraq - In twin attacks targeting Iraq's major Shiite Muslim cities, car bombs in Najaf and Karbala killed at least 62 people Sunday and wounded 120, threatening to inflame sectarian anger as the nation prepares for next month's election.

(By Edmund Sanders, Los Angeles Times, 12/20/2004 03:01 AM EST)

Wishbone come true: Bluffton gets new pet shelter

Backers catch the scent after terrier's tale

WPTA: 21 Alive

- ◆ [Downtown Parking Garage Expected To Be Open »](#)
- ◆ [Auburn Foundry Plant 1 Closes »](#)
- ◆ [INDOT Clears Up Misconceptions About Sound Barrier Walls on I-69 \(video\) »](#)
- ◆ [Officials Reconstructing Fatal Accident in Adams County \(video\) »](#)
- ◆ [Reports of Problems with Celebrex \(video\) »](#)
- ◆ [Four Dead In Rural Adams County Crash »](#)
- ◆ [Noble County Man Has West Nile »](#)
- ◆ [New Program to Help Low-Income NIPSCO Customers Stay Warm \(video\) »](#)
- ◆ [Fort Wayne Police Stumble upon Marijuana Growing Operation \(video\) »](#)
- ◆ [Major Changes for Indiana General Assembly \(video\) »](#)

WISE 33

Plant One at Auburn Foundry closes

Some left in song, others in silence. That silence, now falling on plant one of the Auburn Foundry. [\(full story\)](#)

Local teenagers and handguns

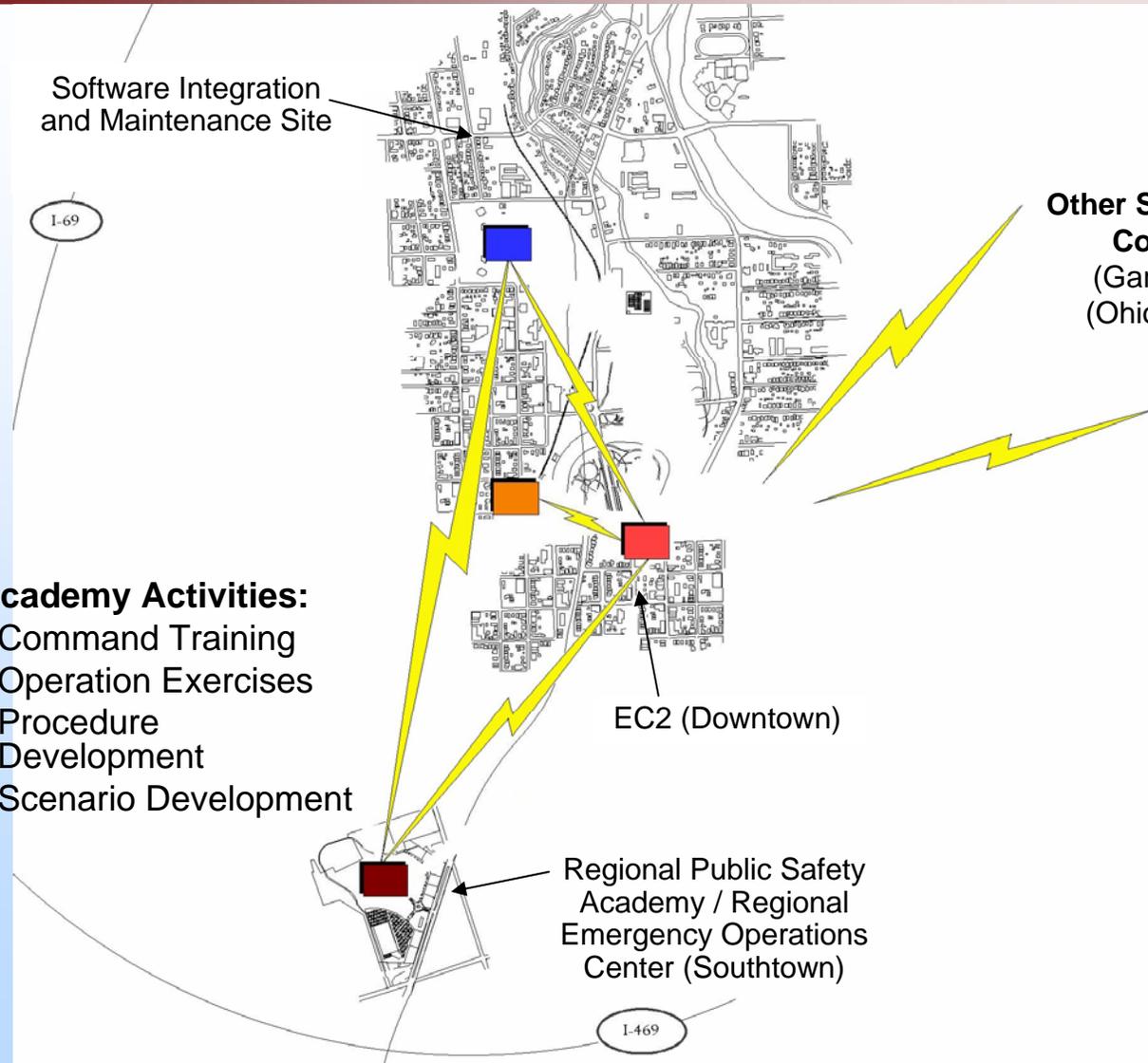
They're only teenagers and an alarming number of them want permission to carry a deadly weapon. Friday night, we asked them why. [\(full story\)](#)



KRISTEN
PH. 11



Regional Public Safety Concept



**Other States / Region / Area
Command Centers**
(Gary, South Bend, ...)
(Ohio, Illinois, Michigan)

**Other Training Centers
/ Academies**

Academy Activities:

- Command Training
- Operation Exercises
- Procedure Development
- Scenario Development

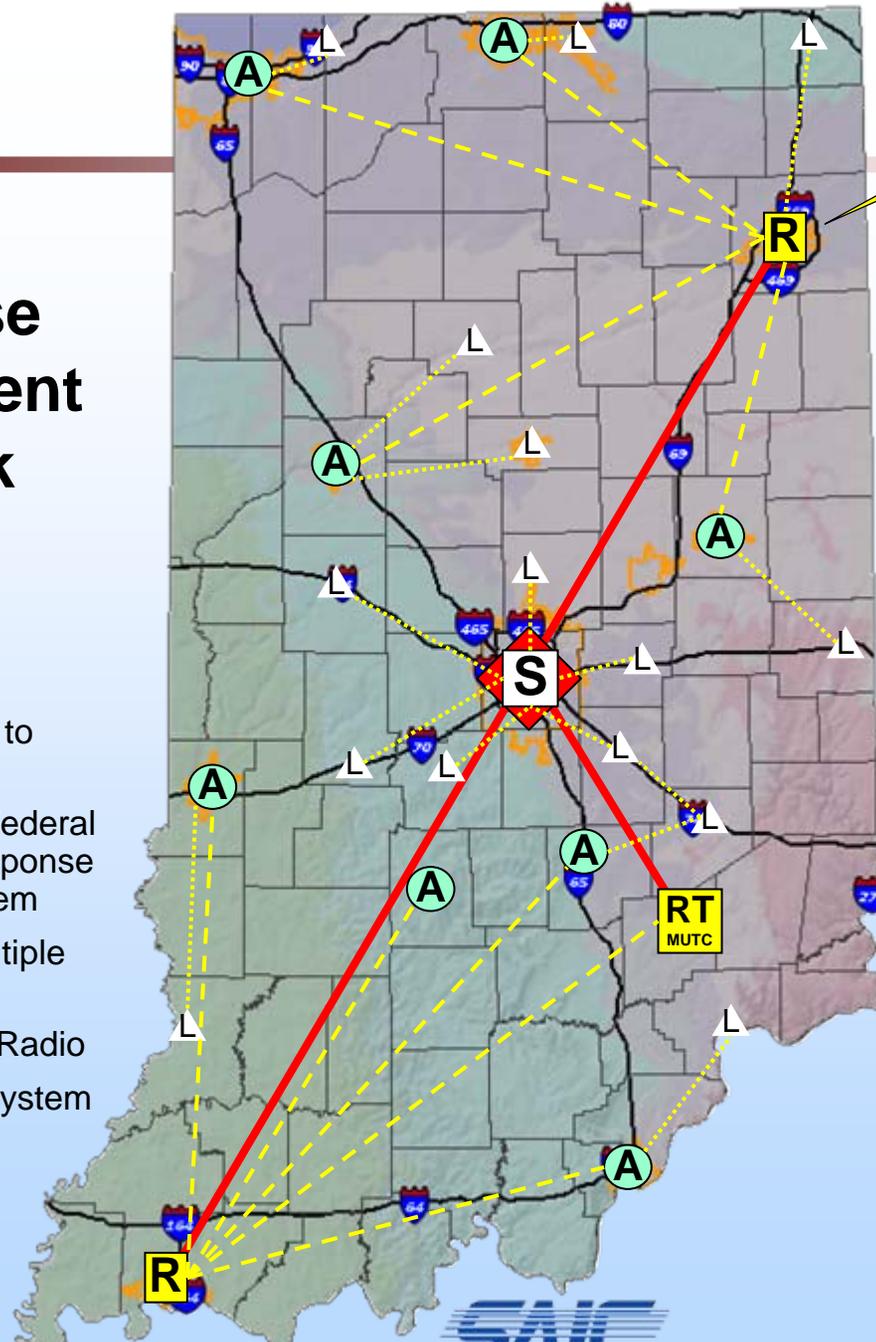
EOC Duties:

- Event Management
- Regional Coordination
- Exercise Scenarios
- System Stimulation
- System Simulation
- Event / Exercise Replay



State Response Management Network (Notional)

- Integrated Centers
- “Live” Operation
- From “Dashboard” to “Dismounted”
- Coordinates with Federal via State-level Response Management System
- Integrates with Multiple Communications:
 - Web to Tactical Radio
- Basis for Legacy System Integration



Networked with Adjacent State via Regional Centers

- State Response Management Facility
- Regional Response Management Facilities
- Regional Training Center
Muscatatuck Urban Training Center (MUTC)
- Area Response Management Facilities
- Local Response Management Facilities



FEATURE DEFINITION

STATE RESPONSE MANAGEMENT FACILITY - INDIANAPOLIS

1. Statewide Command Center
(Multiple Executive Dashboard Sites)
2. Multiple Ops Centers
(Counties and Agencies)
3. State Regions Coordination Cell
4. Federal Coordination Cell
5. Capital Command Cell
6. Network Training Site

AREA RESPONSE MANAGEMENT FACILITY - Gary/Lafayette/Columbus/ Bloomington/Terre Haute/Muncie/ South Bend/New Albany

1. Area Command Center
2. Area Op Center(s) Integrated
3. Integrated Dashboard
4. Op Centers
(Counties and Agencies)

REGIONAL RESPONSE MANAGEMENT FACILITY - Fort Wayne/Evansville

1. Regional Command Center
(Integrated Dashboards)
(Op Center Integration)
2. Multiple Op Center
(Counties and Agencies)
3. Networked Training Site
4. State Coordinator Desk
5. Federal Coordinator Desk

LOCAL RESPONSE MANAGEMENT SITES

1. Integrated Dashboard
2. Local Agency Integration
3. Michigan City/Elkhart/Angola/Logansport/
Kokomo/Richmond/Greensburg/Vincennes/
New Albany
4. Area Around Indianapolis



KEY TECHNICAL FEATURES

AUTOMATION FEATURES

- Integrates with various databases simultaneously
- Message generation, processing, storage and retrieval
- Message distribution, forwarding, and relay
- Legacy system interoperability
- Sensor package interfaces: card reader, life signs monitor, digital camera, laser binoculars
- Unit movement playback and archiving
- Critical Event Alert: panic, flash, medical emergency, officer needs assistance, etc...

COMMUNICATION FEATURES

- Communications and data interoperability
- Efficient digital communications structure
- Seamless multimedia data communications: LAN, WAN, analog or digital radios, telephone, cellular, wireless
- Automatic Intra-networking, inter-networking, and multi networking
- Report, requests, map objects and overlay digital transmission
- Autonomous (remote equipped) mobile unit transmission

GRAPHICAL DISPLAY FEATURES

- Fixed / Mobile asset locations (GPS-based)
- Mobile timed stamped tracks (GPS-based)
- Incident area locations
- Electronic maps (raster/vector)
- Multiple map scales (zoom in/out)
- Incident / zone / planning overlays
- Communications network and status
- Current asset / unit status / unit tasking
- 2D / 3D display views

PLUS: Electronic Post-It Notes

Text

Images

Video

Site / Building Plans

Executive Dashboard Screenshots

Executive Dashboard
Tuesday, August 30, 2005 10:15:58

Find Address
[Input Field]

Symbols
 Users Incidents Notes Units Misc

- Hazmat Alert**
EOC Advisory N. Anthony
- Avoid Coliseum Blvd**
EOC advisory
- Auto Accident**
Coliseum and N. Anthony
- Serious Accident**
Coliseum at N. Anthony

Chat
[Chat Area]
To: [Input Field] Send
Message: [Input Field]

Email

- Street Dept**
Ardmore Truck Route
- City Council**
Ruling
- WPTA** Thr Dec 02
Interview
- Gov Daniels** Thr Dec 02
Press Conference

News
Local State Federal

CRM
TVA 3-1-1

CCTV
All EC2 Media Room CityCam

Controls
Clear Log
Cellserver: /proxy02.cgi/building5/
Microseconds: 500 Run Simulation
Department: Police

Auto Accident
Coliseum and N. Anthony
Posted 2 minutes ago

Map Satellite Hybrid

©2005 Google

Map data ©2005 NAVTEQ™ Terms of Use

Executive Dashboard Screenshots

Executive Dashboard - Mozilla Firefox
http://fourdev.com/dashboard/dashboard.html#

Executive Dashboard
Wednesday, July 13, 2005 11:38:16

CAD online

Find Address

Symbols

- 311
- 911
- Notes
- Units
- Misc

- Sandeep Rajdev**
FireTruck
- Chuck Zumbun**
StatePoliceCar
- W897**
StatePoliceCar
- W128**
CountySheriff
- W928**

Chat

Email

News
Local State Federal

CRM
TVA 3-1-1

CCTV
All EC2 Media Room CityCam

Controls



Executive Dashboard Screenshots

Executive Dashboard
Monday, August 29, 2005 13:33:39
POLICE CAD online

Find Address
400 E Coliseum

Symbols
 Users Incidents Notes Units Misc

- cellserver
NetMember
- 00010109033333
NetMember
- 035
CityPoliceCar
- Hazmat spill suspected**
Coliseum and N. Anthony

Chat

To: Send
Message:

Email

- WPTA Thr Dec 02
Interview
- Gov Daniels Thr Dec 02
Press Conference

News
Local State Federal

CRM
TVA 3-1-1

CCTV
All EC2 Media Room CityCam

Controls

Map Satellite Hybrid

Hazmat spill suspected
Coliseum and N. Anthony
Posted 31 minutes ago

Map data ©2005 NAVTEQ™ - Terms of Use

Executive Dashboard Screenshots

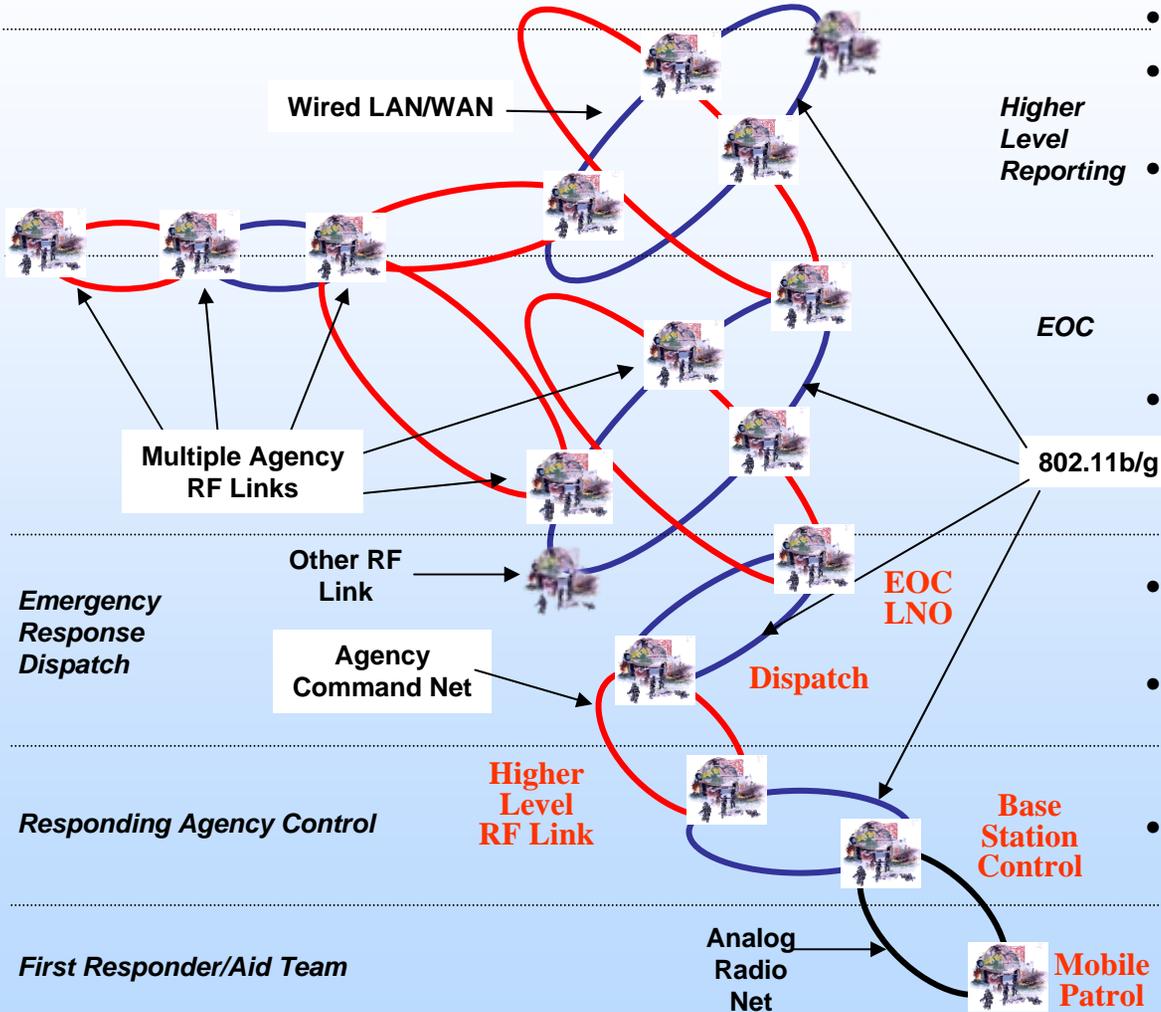
The screenshot displays the 'Executive Dashboard' in a Mozilla Firefox browser window. The browser's address bar shows the URL `http://fourddev.com/dashboard/dashboard.html#`. The dashboard interface includes:

- Navigation:** 'Map' and 'Satellite' buttons in the top right corner.
- Left Panel:**
 - Find Address:** A search bar containing '300 E. Main St'.
 - Symbols:** A list of vehicle types with checkboxes for '311', '911', 'Notes', 'Units', and 'Misc'. Selected items include Kyle Moore (EMSHelicopter), Chuck Zumbun (StatePoliceCar), W897 (StatePoliceCar), W128 (CountySheriff), Sandeep Rajdev (FireTruck), and W928.
 - Chat:** A text input field with a 'Send' button.
 - Email:** A text input field.
 - News:** Filter buttons for 'Local', 'State', and 'Federal'.
 - CRM:** Filter buttons for 'TVA' and '3-1-1'.
 - CCTV:** Filter buttons for 'All', 'EC2', 'Media Room', and 'CityCam'.
 - Controls:** A list of status messages such as '01: Disconnecting: Got NoCity response from NoCity query...'.
- Main Map:** A Google Maps view of a city street grid. A yellow callout box titled 'Public Utilities ImageNote' is positioned over the map, containing a photograph of a yellow construction vehicle and the text 'Posted 3 hours ago'. Other map features include street names (e.g., N Wells St, S Canton St, E Main St), parks (Lawton Park, Traders Point Park), and a river.
- Bottom Right:** An inset map showing the current location within a larger regional context, with a red pin marking the location near For-Wayne.

Radio Configurations



Operational Architecture

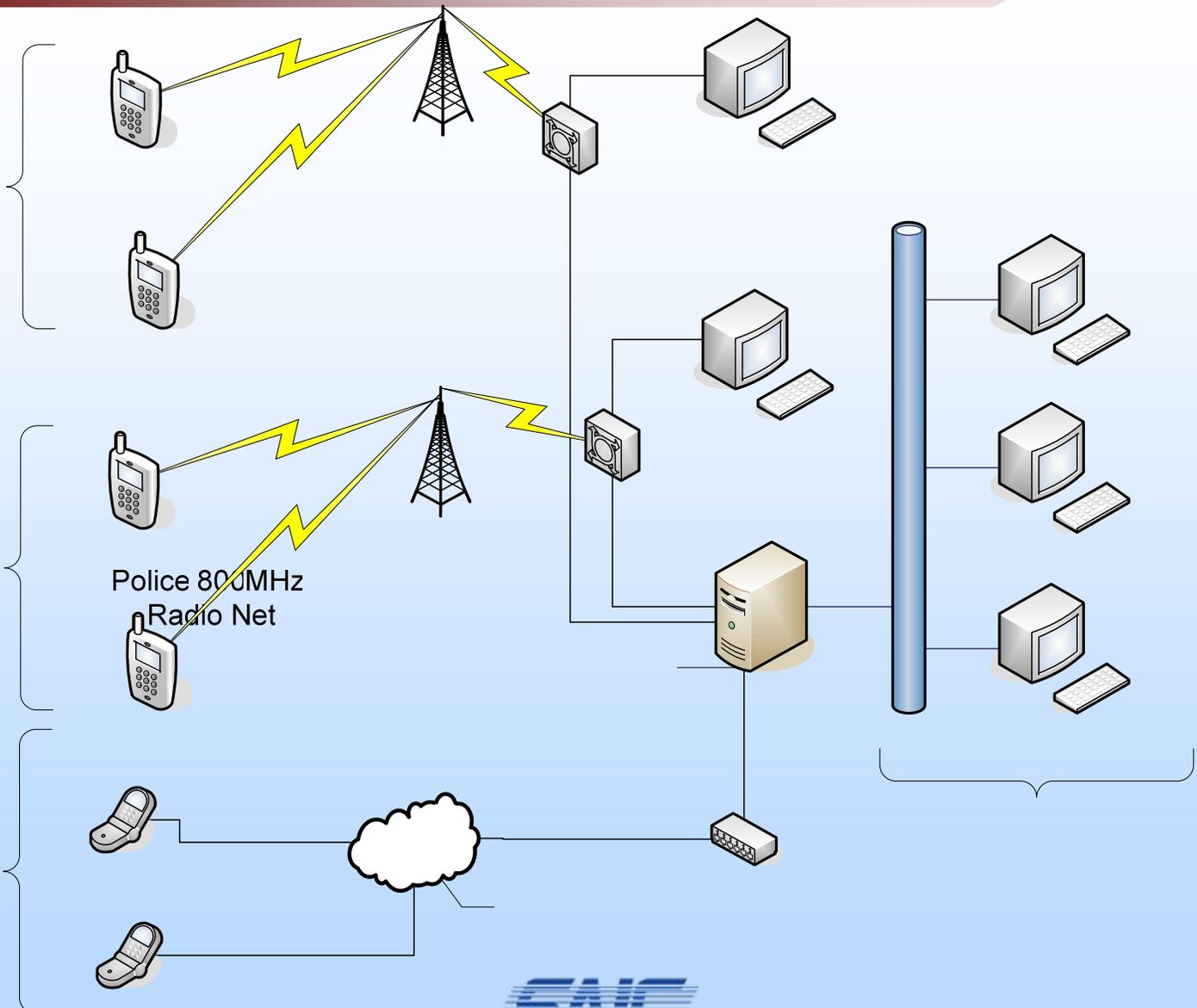


- **Conforms to task organization.**
- **Leverages legacy comm systems and architecture.**
- **Connects different radio systems and nets to form an integrated data network while simultaneously supporting voice communications.**
- **802.11b/g augments capabilities to facilitate automated data networking for C2, SA and collaboration.**
- **Automatic network formation and internetworking.**
- **Architecture eliminates the need to carry multiple voice radios.**
- **Interfaces with existing networks.**

- **Doctrinal Voice/Data Nets**
- **Additional Non-Doctrinal Voice/Data Net**
- **Additional Non-Doctrinal Data Nets**



Multiple Agency Connection Options





Pro's & Con's of SentryPoints

PRO's:

- Agencies would continue to use existing communications infrastructure.
- Insertion of SentryPoints/MINC capability is easily achieved at deployment.
- Agencies could use only what components they need without having to purchase the “full package”.
- Cost of SentryPoints/MINC deployment is several orders of magnitude less than complete restructuring of communications infrastructure.

Con's:

- A decision would need to be reached as to who and where such a repository of such devices would exist. Should this be at the local, state or federal level, or some combination?
- Institutional resistance to “one more solution”.
- Cost of providing this capability to “everyone” may be more than some local budgets allow.

Questions?

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