



APCO International

Association Of Public-Safety Communications Officials-International, Inc.



“Deployment Tool Kit Summary”

**IL Public Safety Conference
October 24, 2006**



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Objectives

You should be able to effectively and with confidence:

- Assess the wireless call capability of current PSAPs
- Define Primary/Secondary PSAP
- Describe wire line/wireless call flow
- Assist with effective wireless call routing, trunking and database decisions
- Identify legitimate ways to use X/Y data
- Create an accurate deployment cost per PSAP
- Better manage stakeholder expectations of service



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Deploy or Not Deploy – It's Your Decision

Today, wireless 9-1-1 calls account for about 50% of all 9-1-1 call volume.

Should wireless 9-1-1 callers, in times of crisis, be denied the features of enhanced 9-1-1 services?



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Successful Project Management

Effective Project Management is required for
Wireless 9-1-1 deployment.

YOU must:

- Identify new PSAP partnerships and call processing participants
- Understand the differences of wireless 9-1-1 call delivery and the impact on your current equipment
- Understand trunking issues
- Understand the basis for 9-1-1 call routing decisions
- Understand the cost responsibilities
- Understand the usage of the X-Y data



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Management of Stakeholder Expectations

Wireless Users-access to emergency services thru 9-1-1 is a quality of life expectation;

Field First Responders-expect location data to always prevent past errors, “pinpoint” location etc;

PSAPs-wireless calls will flow like wireline calls, wireless routing and handling is the same, location data will be consistent and always correct.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Funding Questions?

- Cost Recovery
- Funding programs
- Estimated Costs:
 - Non-recurring Engineering (NRE) and
 - Monthly Recurring Charges (MRC)



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Overview of 9-1-1 network

- Wire line 9-1-1 call
(voice path / ANI / ALI)
- Wireless 9-1-1 call
(voice path /pANI / shell record – phase I and initial display of phase II capable)
- Wireless 9-1-1 call
rebid and phase II information



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Wire line 9-1-1 Call

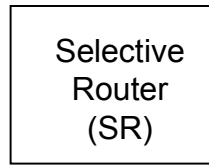
9-1-1
Call from
wireless
phone

LEC



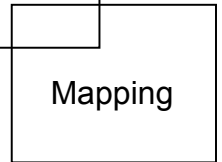
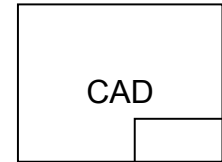
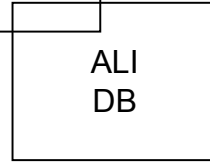
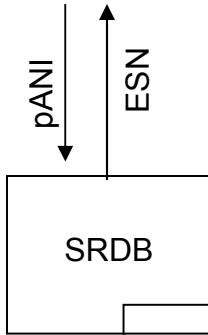
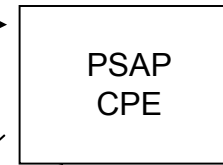
9-1-1 Service Provider

Voice and pANI
[SS7 or CAMA]



Voice and pANI
[CAMA]

PSAP



*Other Names:

- Central Office
- End Office
- Host Office
- Remote Office



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

9-1-1 Network (Phase II is the goal)

- Phase II Wireless 9-1-1 call
 - voice path
 - pANI
 - ALI record
 - Re-bid



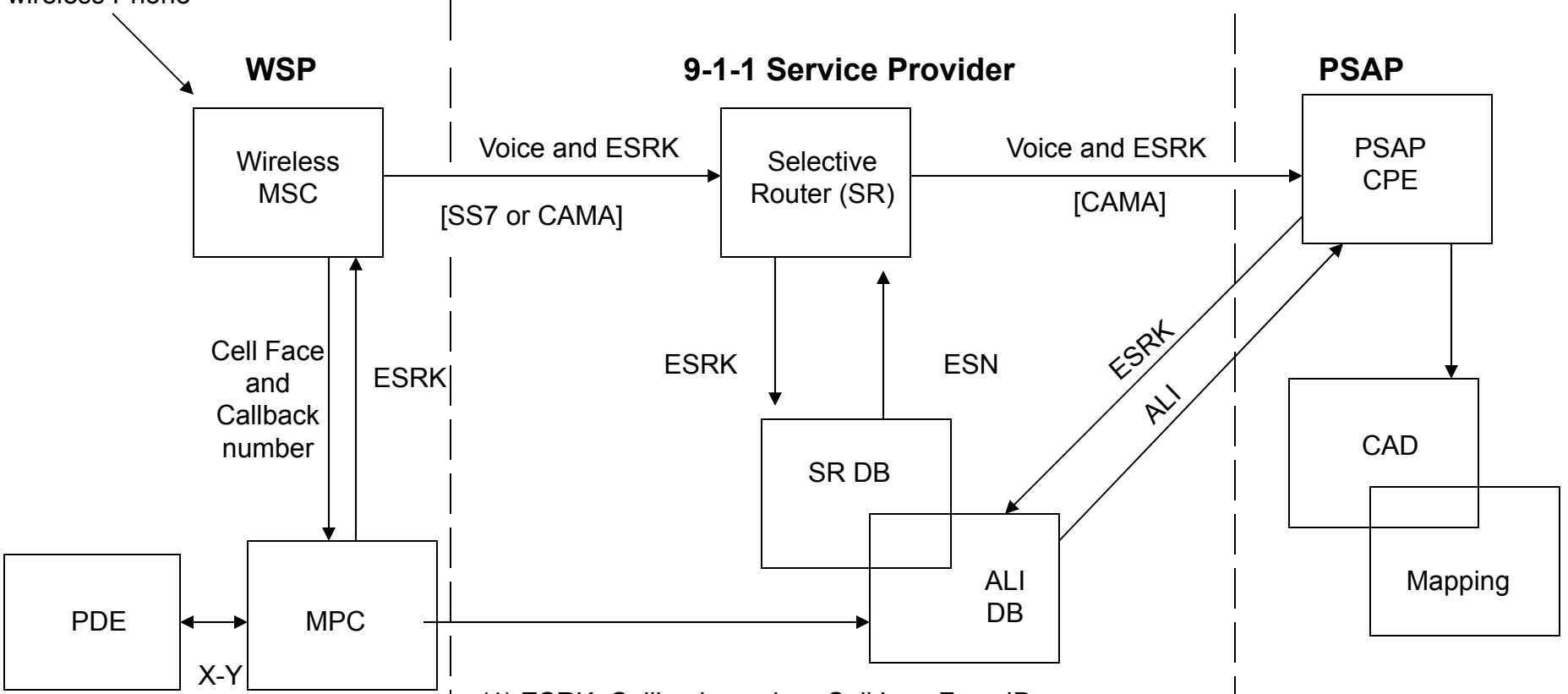
APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Phase II Wireless

NCAS (Non Call Path Associated Signaling)

911 Call from wireless Phone



- (1) ESRK, Callback number, Cell Loc, Face ID
- (2) ESRK, CBN, Cell Loc, Face ID, and X-Y (Updates ALI Record with X-Y information about the caller.)



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Utilization of X/Y Data Elements

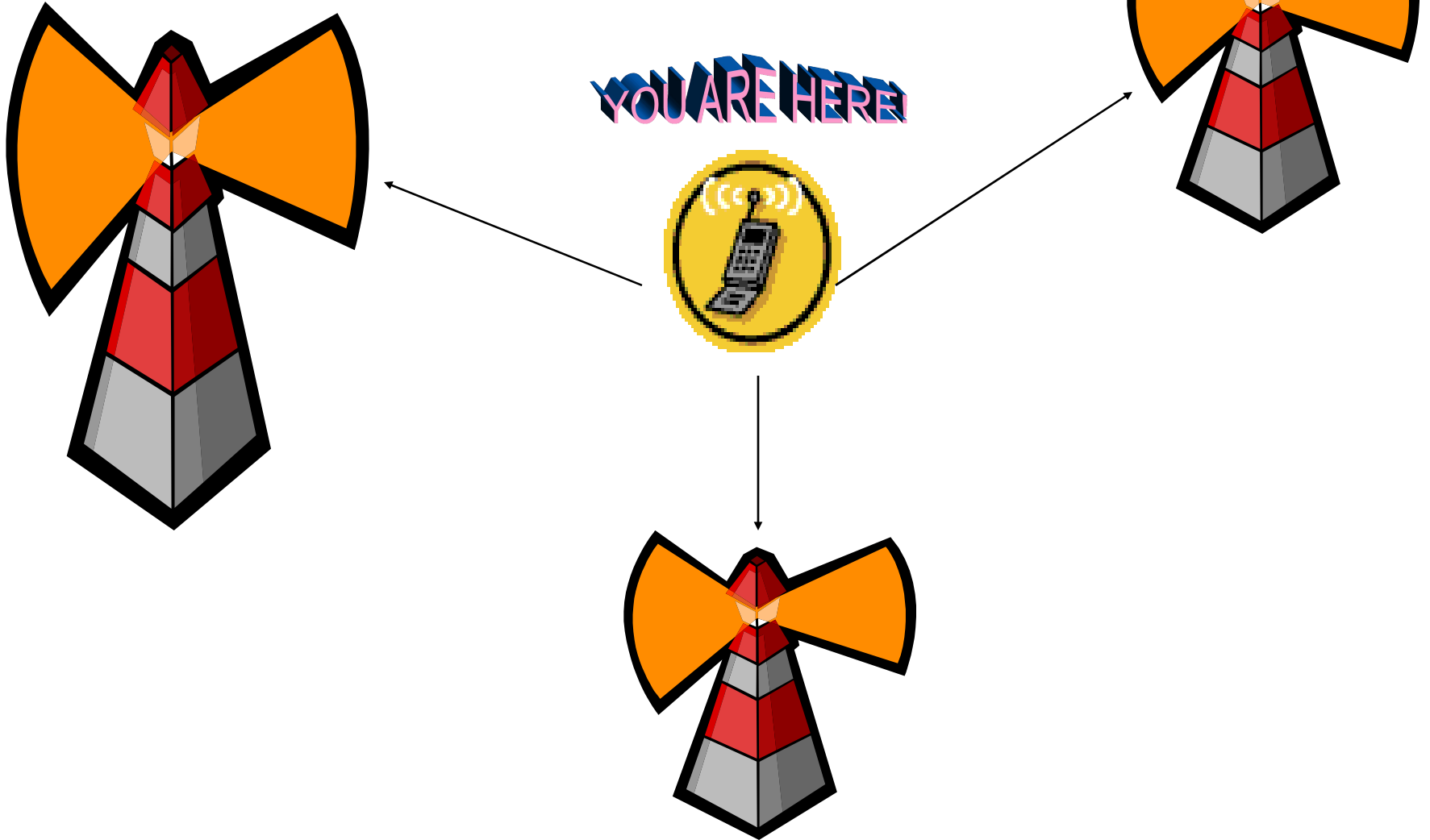
- “use of the E911 data” is the requirement
 - A wide range of available products/accuracies
 - Pros & Cons of each
 - Sharing the cost burden with other ‘users’
 - What do you really get with wireless location data?



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

PHASE 2 TRIANGULATION





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Wireless Location Technology -Network-

- Network Based Phase II Solutions Offers 100 meter accuracy 67% of the time, and 300 meter accuracy 95% of the time.
 - TDMA, GSM, & Analog
 - Generally Good Urban & Suburban Accuracy
 - Rural Accuracy Is Problematic



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

PHASE 2 GPS



Needs a
GPS
Chip
Inside
the
Phone





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Wireless Location Technology –Handset–

- Handset Set Based Phase II Solution offers 50 meter accuracy 67% of the time and 150 meter accuracy 95% of the time.
 - CDMA & iDEN GPS Phones
 - “Urban Canyon Problem”
 - In-Building Coverage Problem
 - Generally Good Suburban & Rural Accuracy



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

The Readiness Assessment Report

- Designation of PSAPs (Today)
- Current equipment compatibility
- LEC and 9-1-1 service provider
- Wireless service providerss
- Staffing and Training
- **All** preparatory to ESIF checklist and formal wireless service request letters



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Trunking Topics

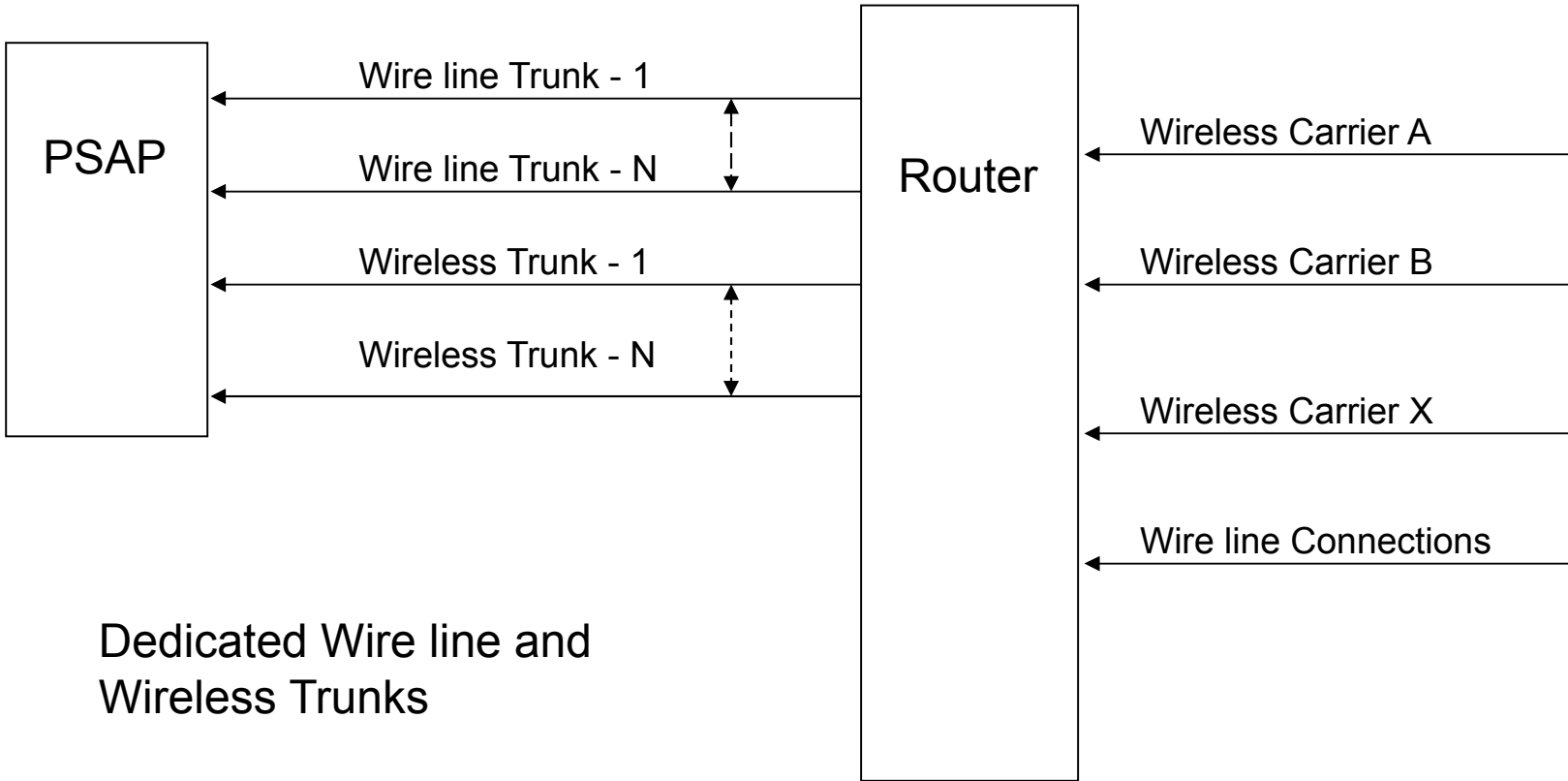
- Dedicated Wireless/Wire line trunks
- Mixed Trunk Groups
- Dedicated and Mixed Trunk Groups



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Dedicated Wireless/Wire line Trunks





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Dedicated Wireless/Wire line Trunks

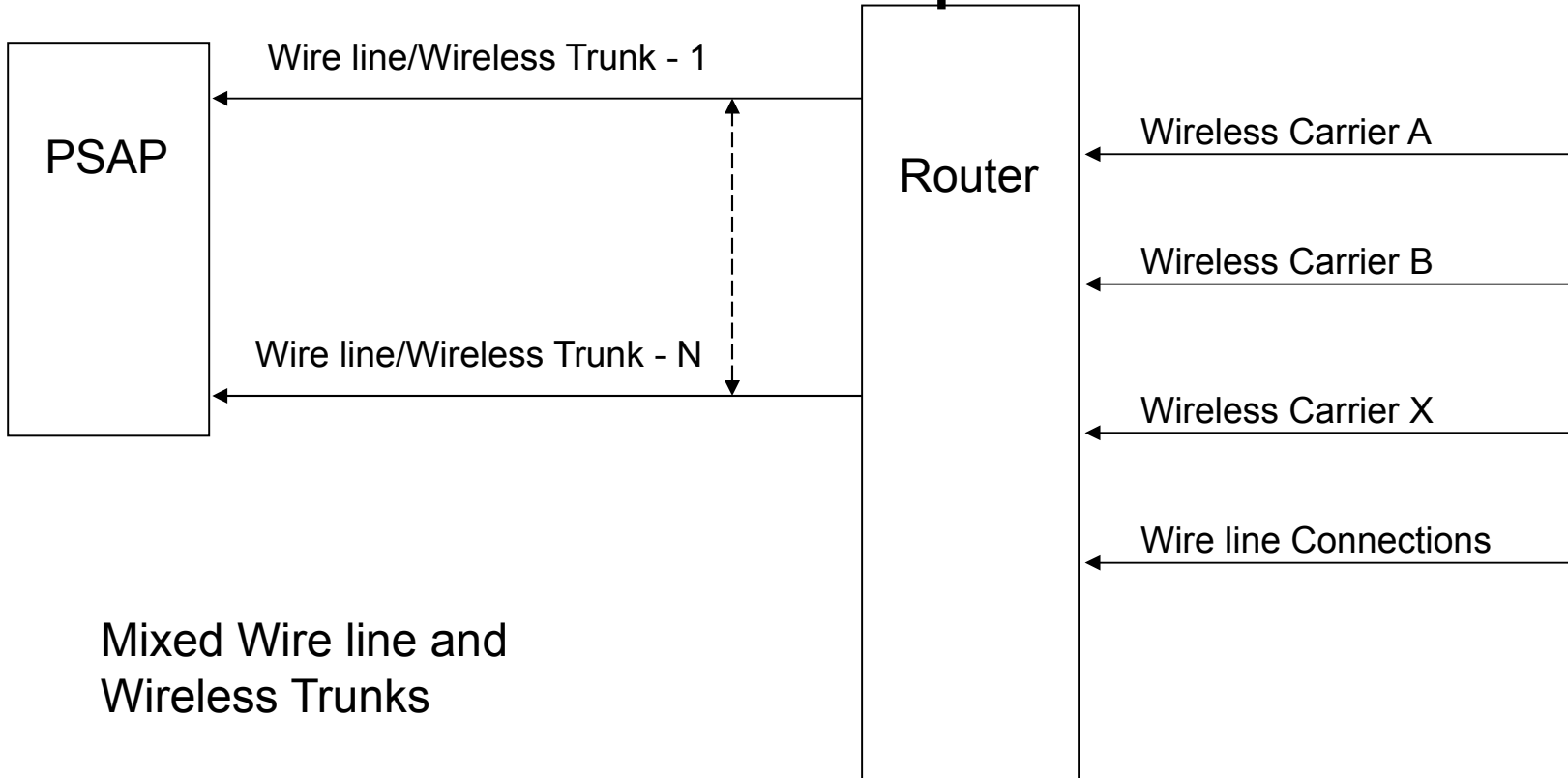
- One trunk group for wire line and one for wireless.
- Trunk group size based on expected call volume. Modified based on actual calls.
- Many systems use equal size trunk groups to retain equity of service.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Mixed Trunk Group





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Mixed Trunk Group

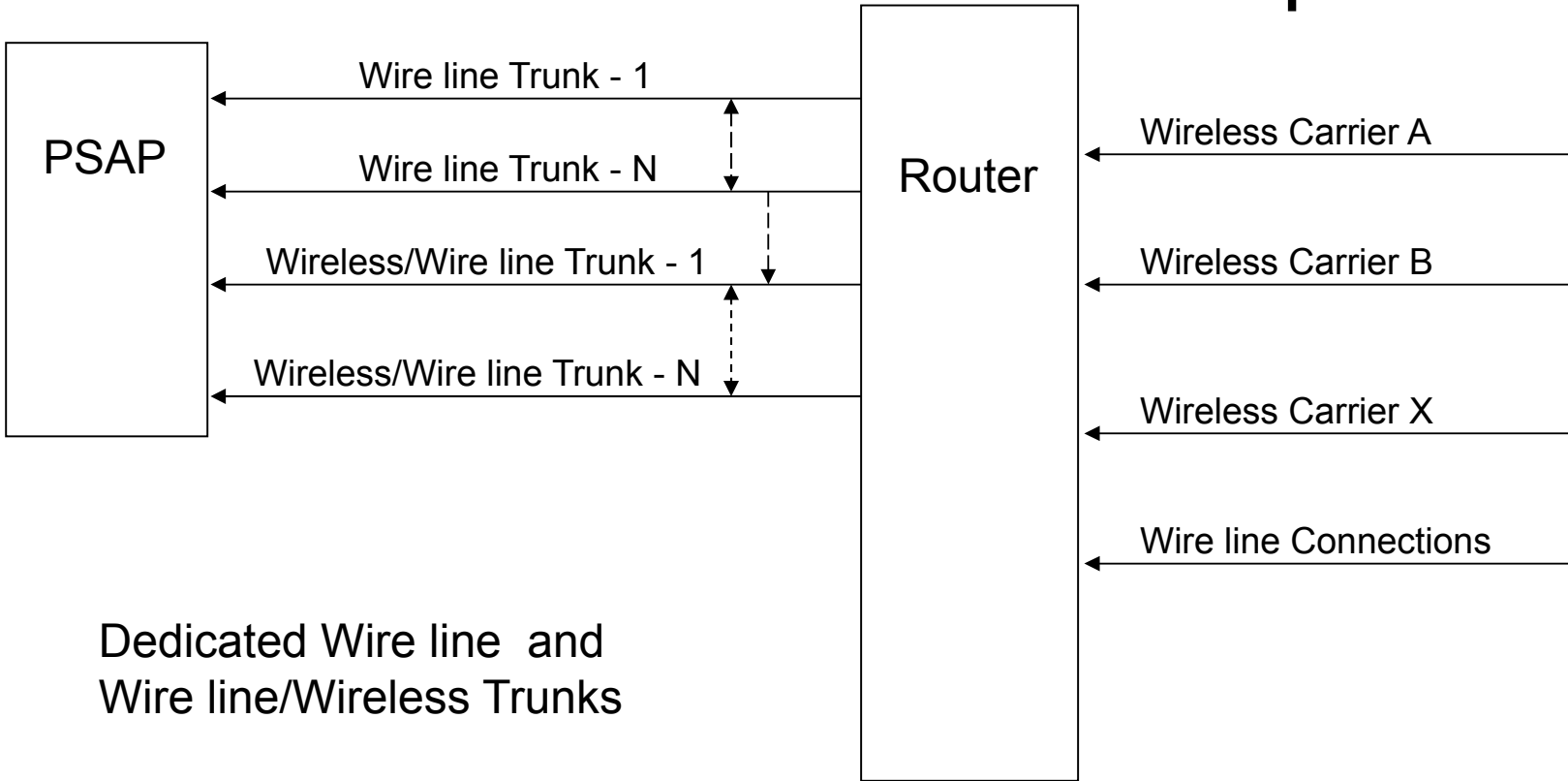
- Wireless and wire line calls mixed together
- Trunk group sized for total traffic.
- No priority given to either wireless or wire line traffic.
- More efficient use of trunks.
- Can result in wireless traffic overwhelming the wire line traffic.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Dedicated/Mixed Trunk Group





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Dedicated/Mixed Trunk Group

- Dedicated wire line trunks.
- Wire line calls overflow into the wireless trunks but not vice versa.
- Keeps wireless calls from overwhelming wire line calls.
- Useful in a small PSAP to help keep trunk group sizes smaller.
- Slightly more efficient than dedicated trunk group design.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Wireless Service Providers (WSPs)

- Identify Carriers (tier 1, 2, and 3)
 - Address, contact name & TN, 24x7 number, etc.
 - Contract
 - Requirement?
 - Authority?



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

WSPs (continued)

Identify per WSP:

- 911 System interface technology (e.g. NCAS)
- Location Technology (e.g. handset, network)



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

WSPs (continued)

Per WSP:

- There may be a “3rd party” that:
 - Supplies coverage maps for the carrier
 - Works with the PSAP on the ALI data base records for the carriers
- Identify the “3rd Party”
 - Address, contact name &TN, 24x7, etc.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

WSPs (continued)

- Testing
 - Support is required from the PSAP
 - Carriers need to provide test plans
 - Initial deployment
 - Maintenance
 - New towers



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Customer Premise Equipment (CPE)

- Dispatch work stations
 - Manufacturer / Model / software generic / etc.
 - Number of positions?
 - Staff?
 - Wireless compliance?
 - Expandability? (e.g. additional trunks)
 - VoIP compatibility?



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Computer Aided Dispatch (CAD)

- Manufacturer / Model / software generic, etc.
- Wireless compliance?



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

ALI Database Topics

- Database modifications required?
 - ALI record format
 - ALI data stream to PSAP
 - Data transfer (wireless carrier to ALI DB) requirement

Summary of Non Recurring
Engineering (NRE) and Monthly
Recurring Charges (MRC)



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

ALI Display topics

- Correlation to worksheet
- Uncertainty variable
- Class of Service Codes representing
 - Phase I data (Phase I capable only);
 - Phase I data (Phase II capable);
 - Phase II data (Rebid/Retry) – X/Y



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

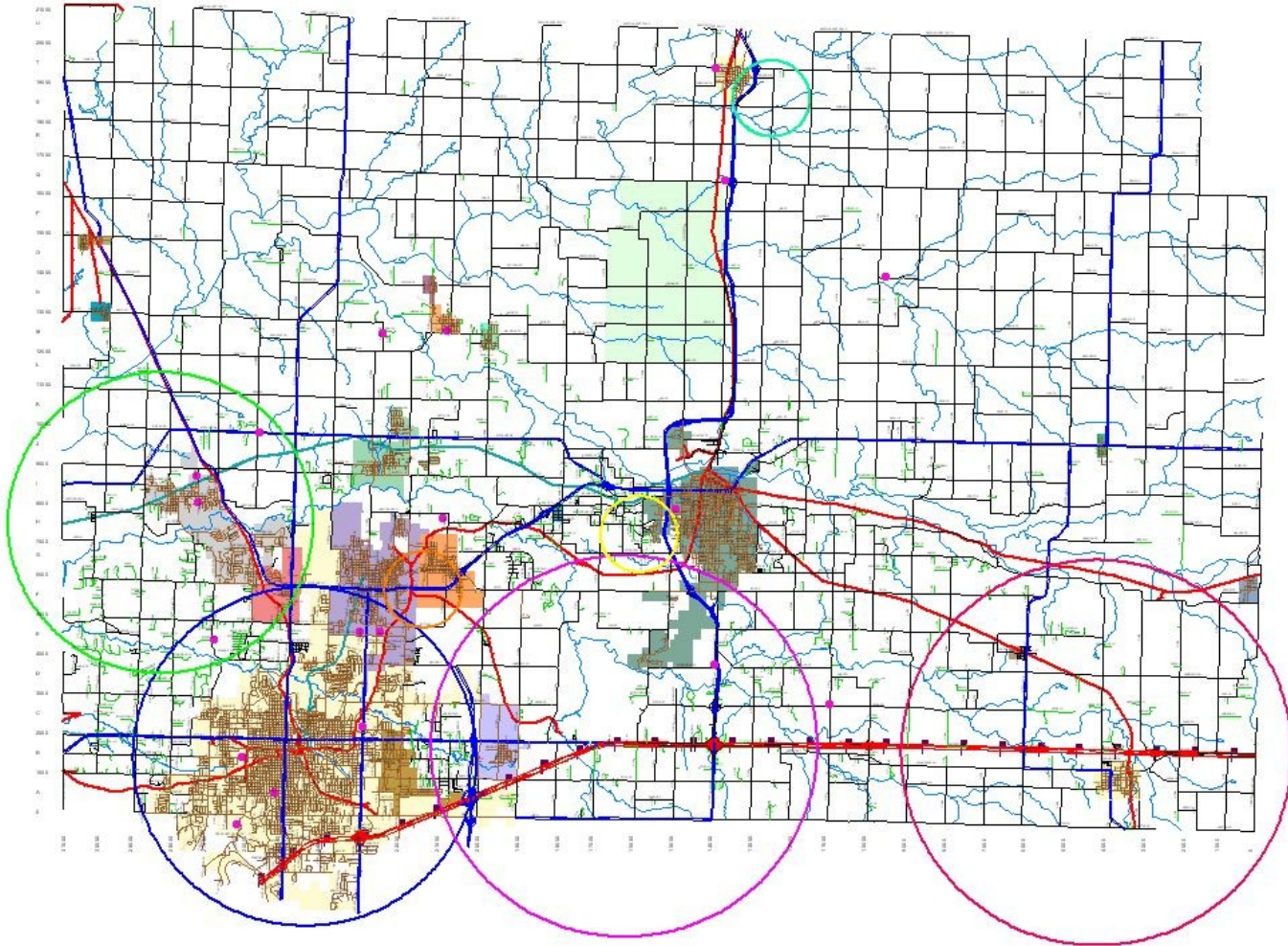
Routing decisions

- Existence of 3rd parties (coverage maps, interface to PSAP for shell data / ALI data base)
 - Omni towers
 - Cell sectors
 - Tools
 - Maps
 - worksheets
 - Maintenance
 - changing routing based on call handling history
 - new towers



APCO International

Association Of Public-Safety Communications Officials-International, Inc.





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

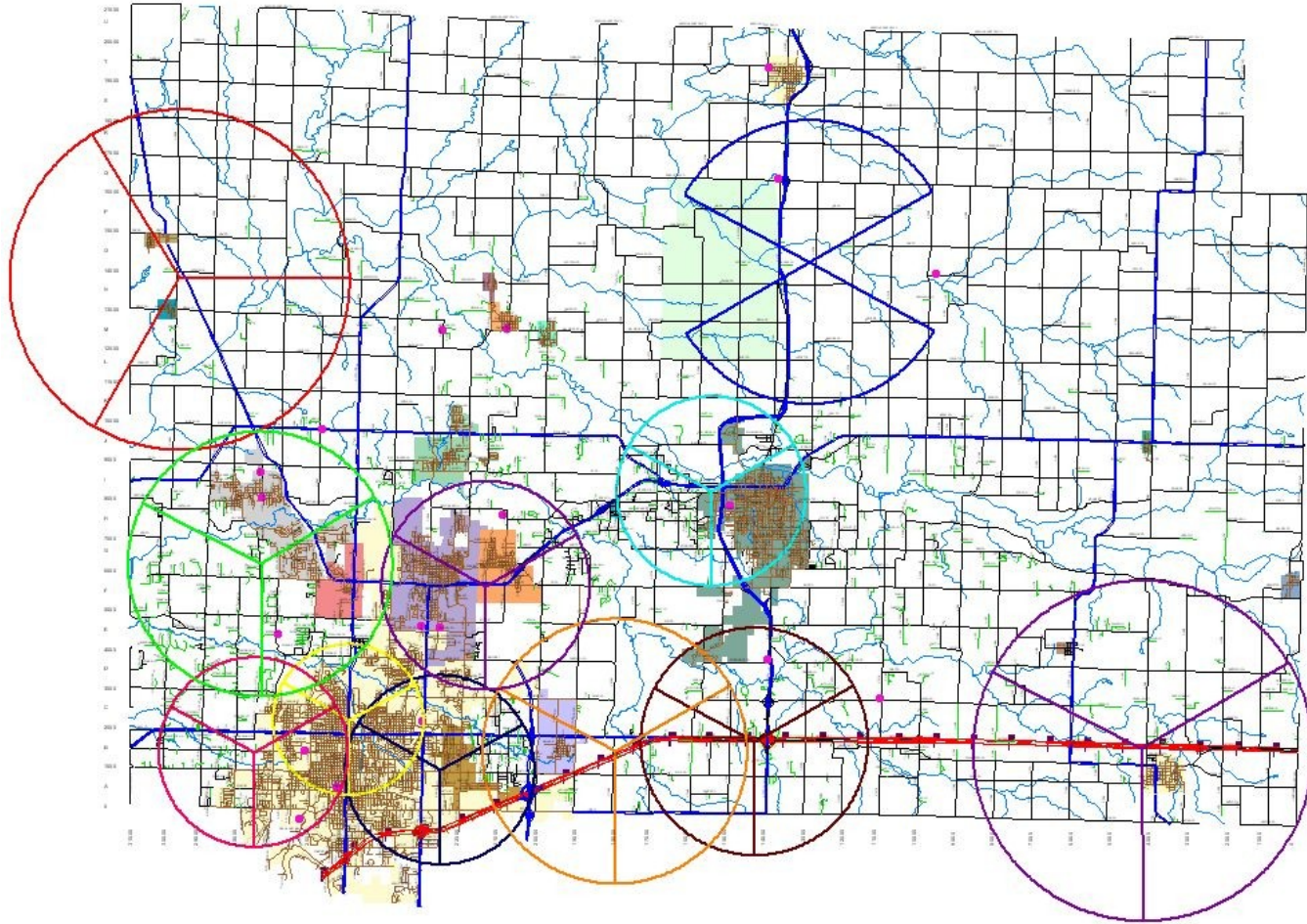
Wireless Boundary Issues

- Organize work sessions with the carriers and neighboring jurisdictions
 - Maps
 - Worksheets
- Establish Agreements:
 - ALI Format
 - Call Routing
 - Default Routing
 - Testing



APCO International

Association Of Public-Safety Communications Officials-International, Inc.





APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Wireless Call Testing Requirements

- Call Routing
- ALI data
 - Correct format
 - Correct data elements



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Public Education

- Public Service announcements available for TV, radio, meetings
- Wireless 9-1-1 Call Cards
- Share good and bad events



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Public Education



APCO International - Project LOCATE

Helping to Locate Our Citizens in Times of Emergency

To get help to you quickly, please be ready to answer these questions:

Where is the Emergency? Use road name, number, direction of travel, mile markers, intersections, landmarks etc

What number are you calling from? Always give the area code, wireless phone number. If using a phone without a service contract and the call is disconnected, YOU must redial 911

What exactly has happened? Clearly describe what has taken place. Ex: What is on fire? Is the person conscious and breathing? Is the person visibly injured? Types and number of vehicles involved? If reporting a crime, vehicle & suspect descriptions are always important.

Call 9-1-1 ONLY when an immediate response by police/fire-rescue/medical services is required.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

Public Education



Enhanced Wireless 9-1-1 Services can save lives, reduce pain and suffering as well as mitigate damage to property. You can help improve services and prompt responses by:

- 1. Learning the non-emergency telephone numbers in your area;**
- 2. Not programming your cell phone to dial 9-1-1 when just one button is depressed;**
- 3. Disabling the auto dial to 9-1-1 on your cell phone**
- 4. Locking your keyboard when the phone is not in use to avoid accidental 9-1-1 calls, which can cause the unnecessary dispatch of services.**

Since Enhanced 9-1-1 Service does not work everywhere in the U. S.,
BEFORE purchasing any phone or service ASK the wireless service provider what location technology they have in place to assist emergency services find YOU in times of real crisis. ASK your local 9-1-1 Center if they can receive and use your 9-1-1 call location.



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

FINAL WORD ...

Be Resources for each other –

Emails with questions:

LOCATE@APCO911.org



APCO International

Association Of Public-Safety Communications Officials-International, Inc.

An electronic copy of the
Deployment Tool Kit

can be obtained by sending an e-mail to:

LOCATE@APCO911.org