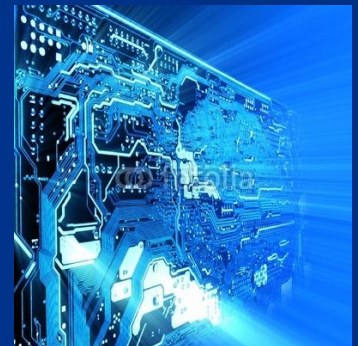




NG9-1-1

Technology, Objectives, Planning & Options

Jay English
Director
Comm. Center & 9-1-1 Services
APCO International



Topics to Cover

- **NG9-1-1 – What it means may vary**
- **Technical Basics – New Terminology**
- **Issues that need to be on the radar**
- **Sensible decisions for your agencies and regions**

So...just what is “NG9-1-1?”

- Public Safety Communications is undergoing tremendous change.
- The transition from circuit switched technology to IP networks and Next Generation 9-1-1 has begun, leaving PSAP's and Telecommunicators to wonder, “What is NG9-1-1 and what does it mean to me?”

So...just what is “NG9-1-1?”

- Next Generation systems will be a “network of networks” providing connectivity between PSAPs on a network within a specified geographic area to other networks both regionally and nationally.

High Level Objectives

STAND UP A SECURE BROADBAND IP NETWORK AND INTERCONNECT PSAPS AND OTHER AGENCIES

Agencies share resources such as CAD, RMS, email & Internet applications



Building a Network

- ❖ Does your state currently operate a secure IP network that could be used for emergency services or for delivery of 9-1-1 calls?
- ❖ Have you assessed requirements for bandwidth to assure that the current network will handle future traffic?
- ❖ How will it be managed/governed in an environment with overlapping jurisdictions?

High Level Objectives

IMPLEMENT IP SELECTIVE ROUTING FOR 9-1-1 CALL DELIVERY (IPSR) USING EXISTING CALL ROUTING DATABASES

[illegible]

What is IP Selective Routing (IPSR)

- **IPSR** replaces the functions of legacy selective routers by routing 9-1-1 calls via IP to a PSAP. It routes calls using existing mechanisms (e.g. ANI, p-ANI, ESRK) and converts incoming calls to **SIP** signaling.

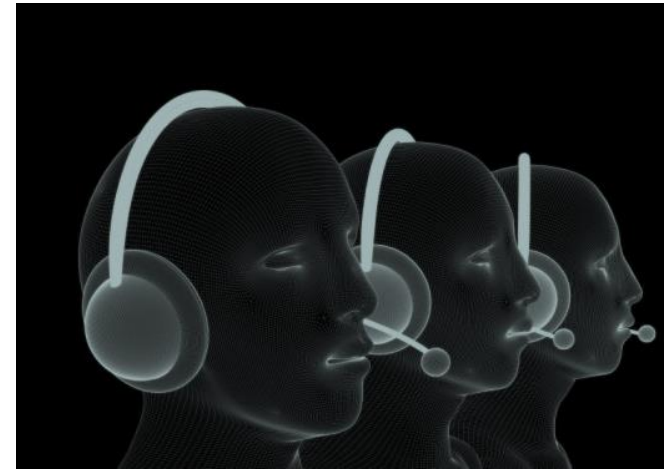


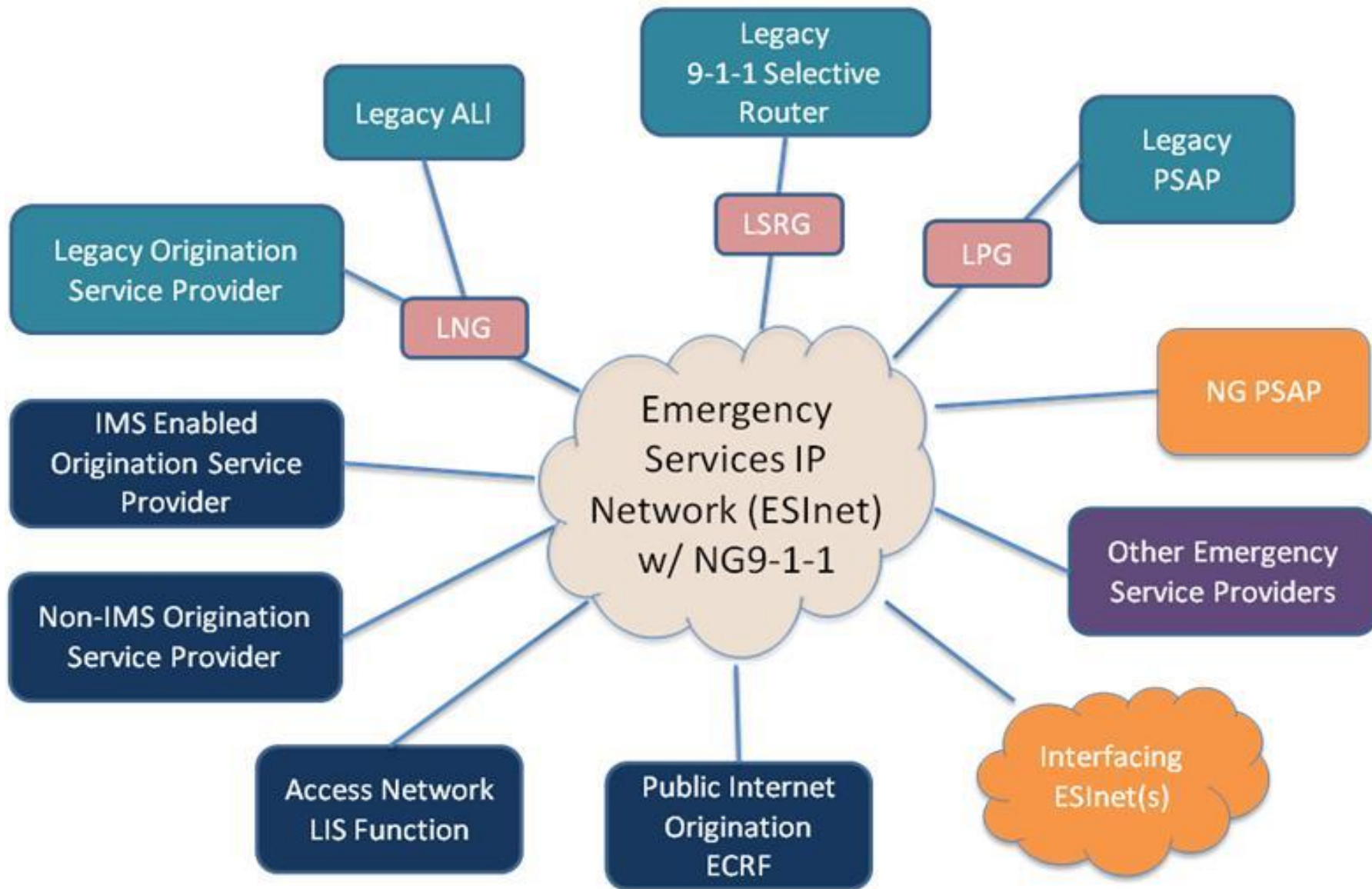
The **IPSR** interface to the PSAP is defined by the ATIS/ESIF Request For Assistance Interface standard (**RFAI**)

**Session
Initiation
Protocol**

*What Is **i3** Next Gen 9-1-1*

- **i3 is the NENA architecture for a system of 9-1-1 services, functional elements and databases that run on an Emergency Service IP Network (ESInet).**
- **9-1-1 calls will be routed via geospatial databases.**
- **ATIS is also working on an IMS based Architecture for ESInets.**
- **Eventually, these will replace E9-1-1 capabilities while retaining the functions in place today.**





Systems & Functionality

NG9-1-1 Systems are made up of Functional Elements (FE) that will provide multiple features & capabilities.

An FE does not have to correspond to a specific product or position in a PSAP.



NG9-1-1 Functional Element Examples

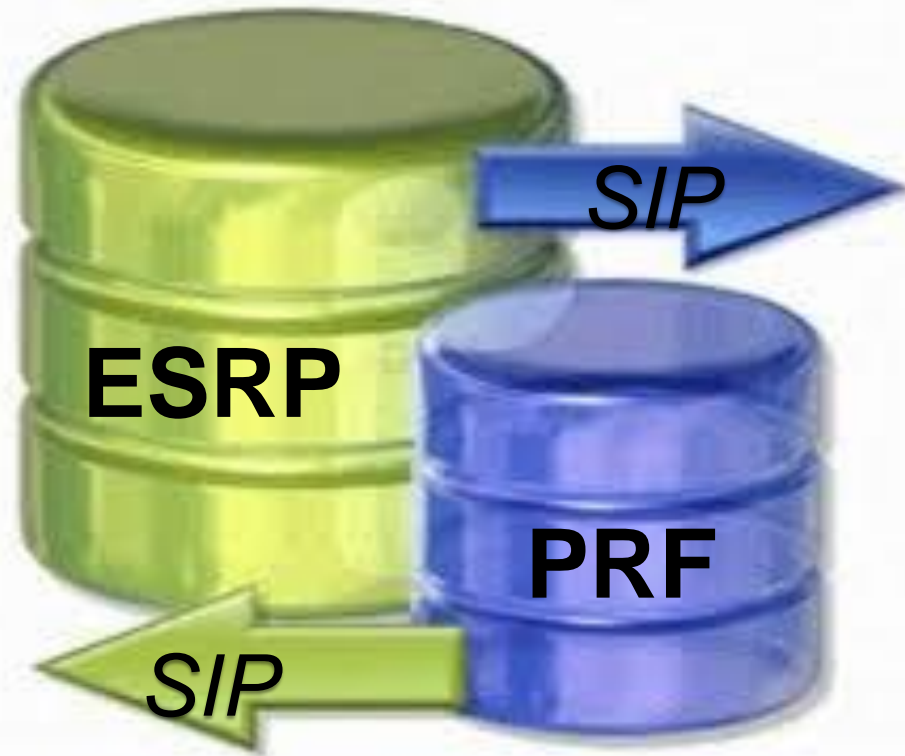
Dispatch	ECRF
Call Handling	ESRP
Mobile Data	BCF
Incident Creation	PRF
Logging & Recording	LVF
GIS	

Beware of legacy 9-1-1 terms that are limited to only one function

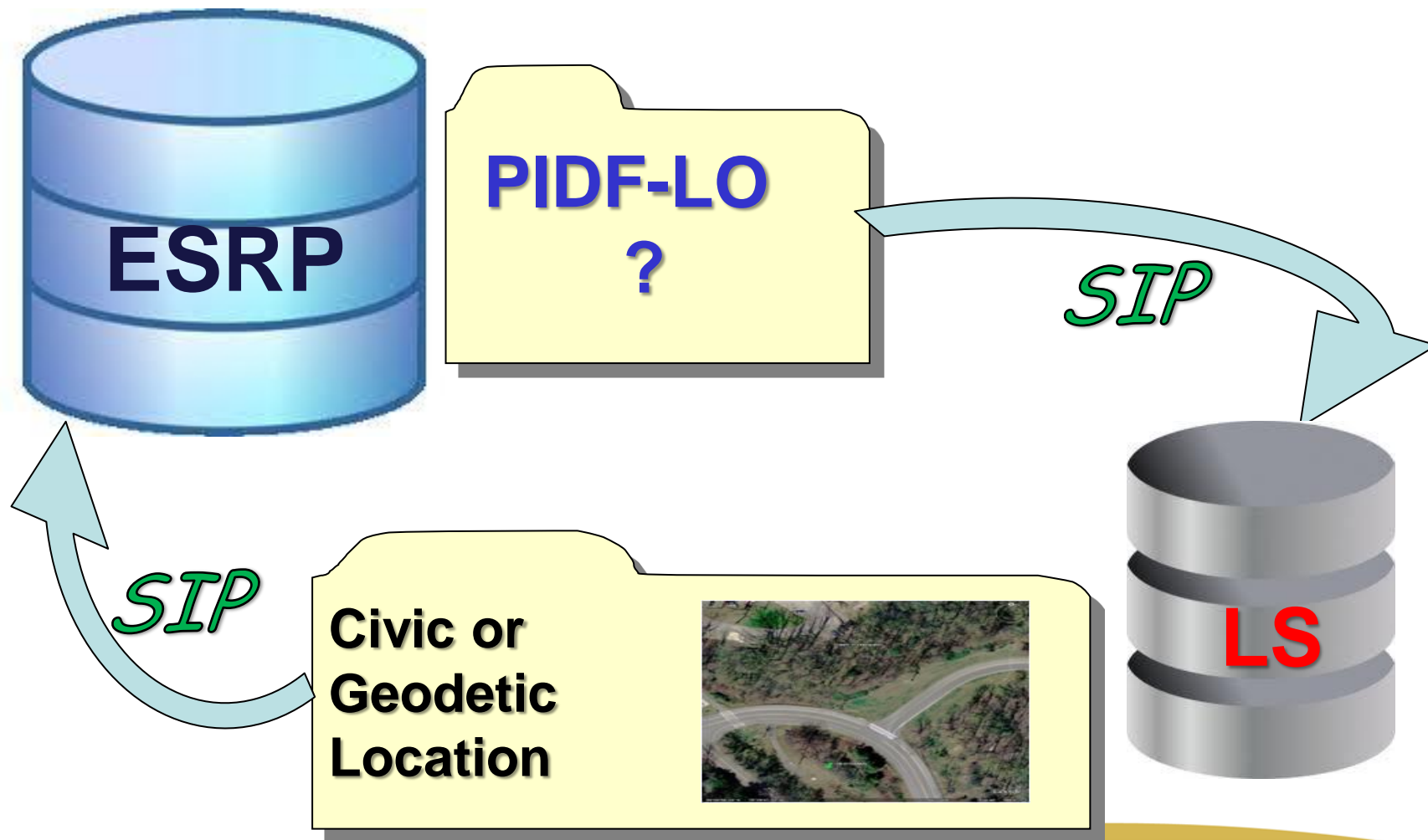
ESRP & PRF

Emergency Service Routing Proxy Policy Routing Function

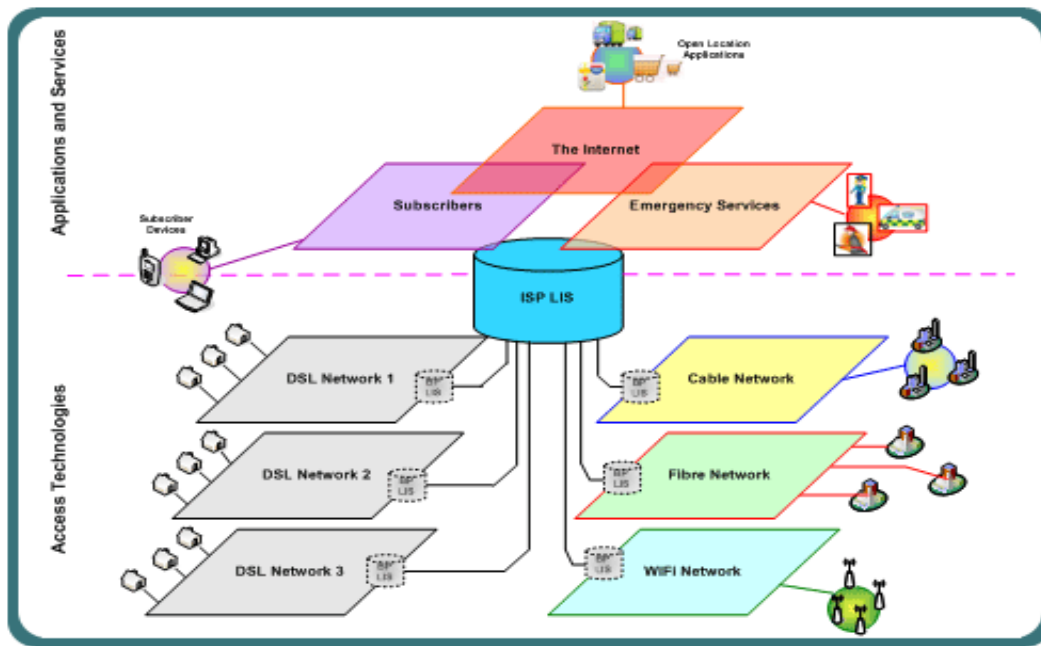
*The
Keys to
the City*



ESRP queries the **LS** (Location Server)



LS-Location Server



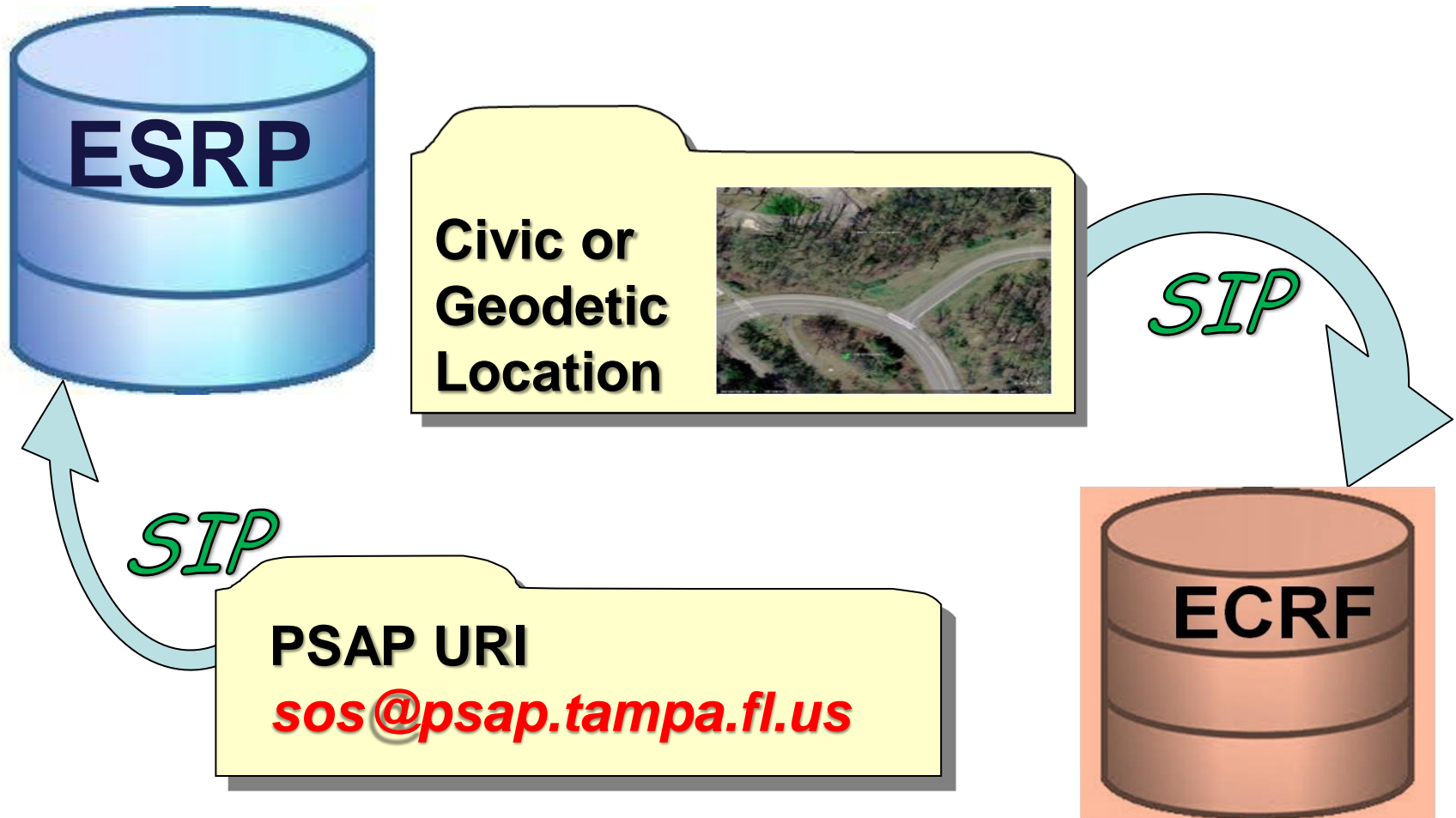
Everything Else

Left side

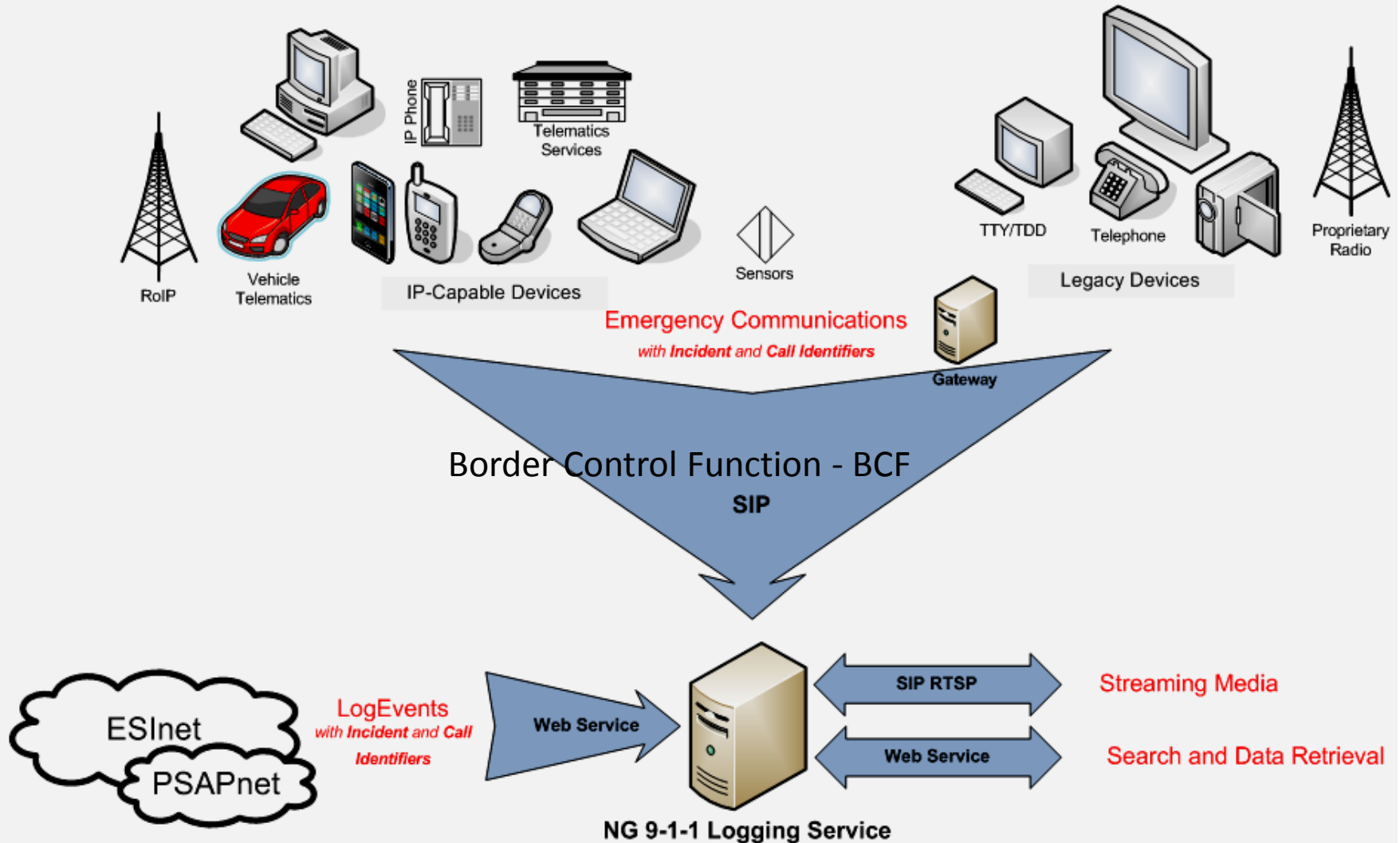
Apt A
4th floor

Suite 502
5th floor
SE corner of Bldg
Caution Hazardous materials

ESRP queries the ECRF (Emergency Call Routing Function)



NG 9-1-1 Logging Services



Gateways

Legacy Network Gateway-LNG

Legacy PSAP Gateway-LPG

Legacy Selective Router Gateway-LSRG

DEPLOYMENT OF EMERGENCY SERVICES IP NETWORK (ESINET)

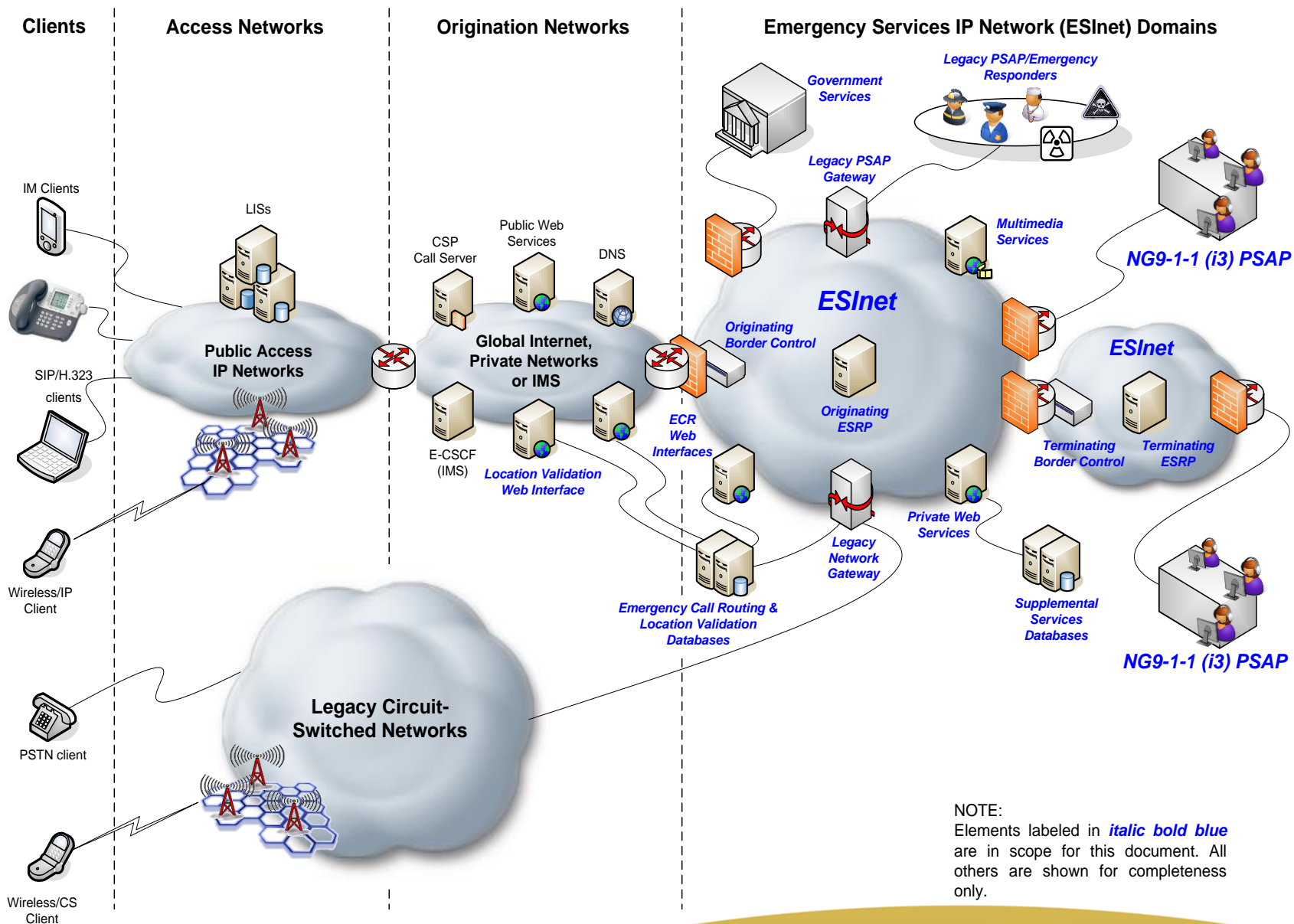


ESInets

- Fundamental to the formation of NG systems is the creation and deployment of Emergency Services IP Networks, or ESInets.
- The ESInet is indeed a network of networks designed to achieve specific Quality of Service (QoS), Security and reliability levels while facilitating enhanced call routing and delivery.

ESInets

- In addition the ability to reroute calls to, and share data with, any PSAP served by the ESInet is a benefit of the transition.
- In spite of the measurable benefit to making the transition, many PSAPs are finding that they are limited by equipment and networks incapable of providing a realistic evolution to NG9-1-1.



NOTE:
Elements labeled in *italic bold blue* are in scope for this document. All others are shown for completeness only.

IP-BASED EMERGENCY COMMUNICATIONS

**9-1-1 calls are only one part of the
public safety ecosystem**

***Requires a broad focus
during the requirements
and design phase***

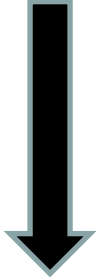


National Public Safety Broadband Network

National Connectivity



Broadband

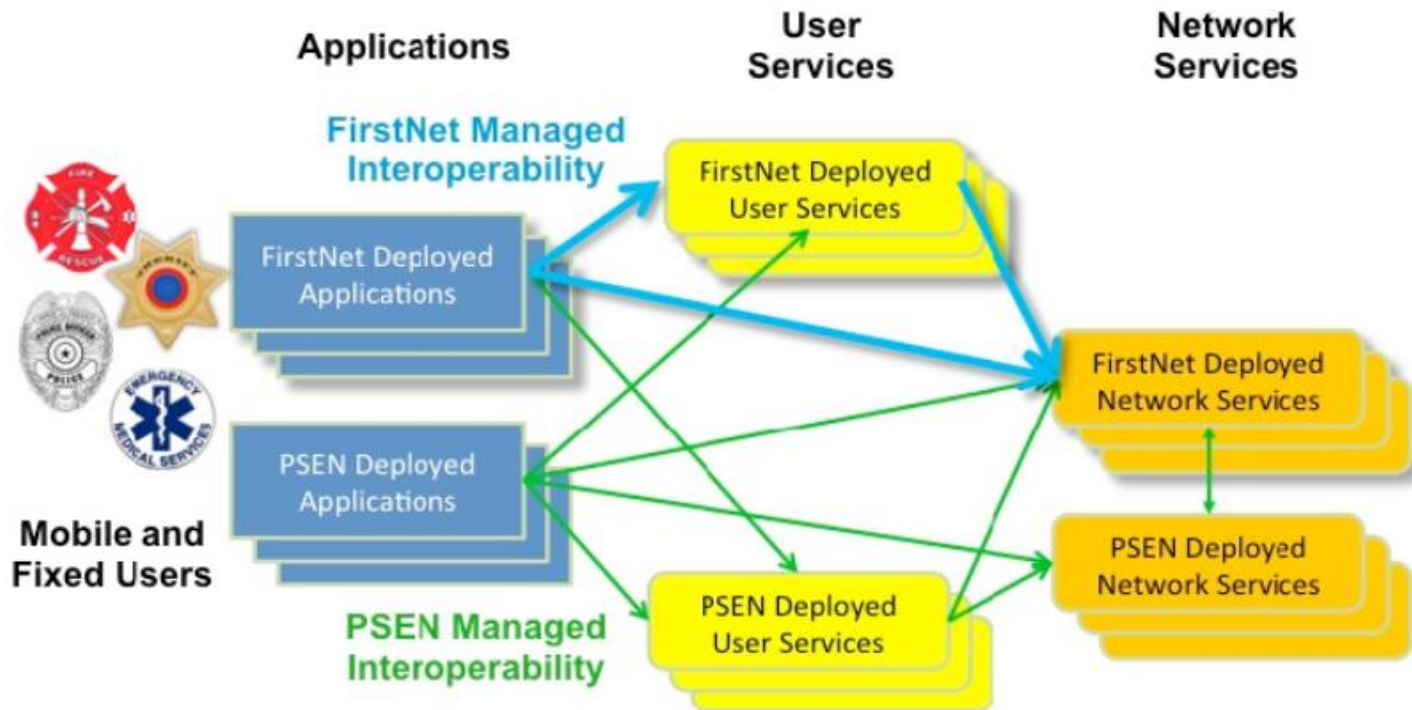


ESInets



**Emergency
Communications
Stakeholders &
Partners**

FirstNet Apps



Examples

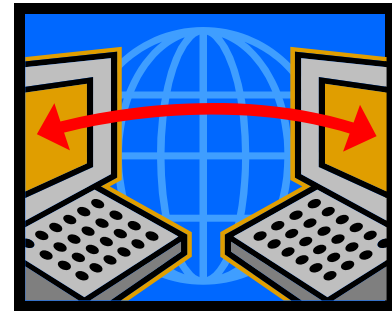
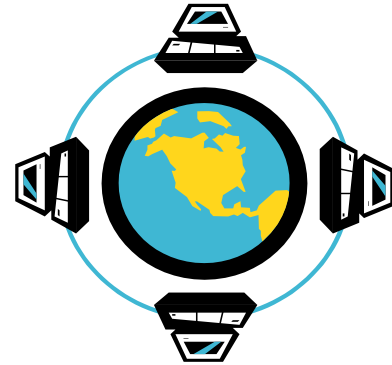
- | | | |
|---|--|---|
| <ul style="list-style-type: none"> • Advanced multimedia telephone • Video • PTT Apps • Fire situational awareness, etc. • Computer-Aided Dispatch | <ul style="list-style-type: none"> • Cellular Telephony • Video • Direct-mode PTT (not for Launch) • Messaging, etc. | <ul style="list-style-type: none"> • Location • Service Discovery • DNS • Identity • Dynamic QoS, etc. |
|---|--|---|

How do you position your agencies to transition to a *fully featured* NG9-1-1 system?

The devil is in the details

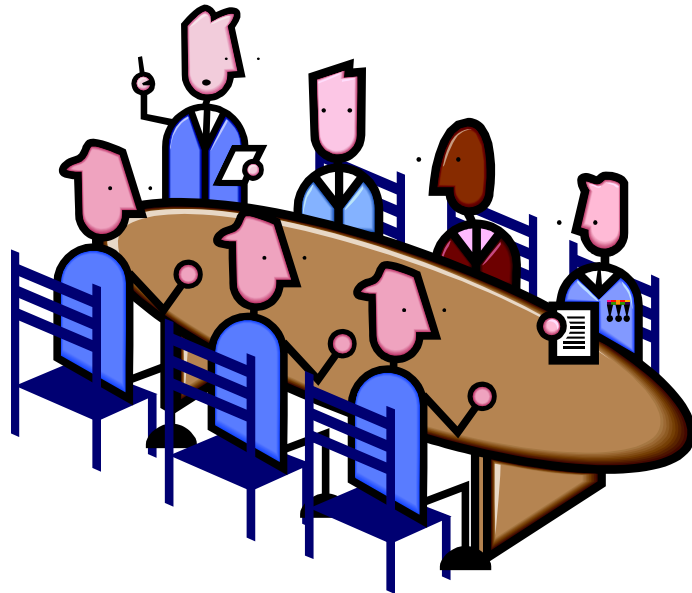
What is the Common Denominator During an Emergency?

All stakeholders will eventually be communicating and sharing data over secure IP networks



Public Safety Stakeholders

What is their state of technical & operational readiness?



**Emergency
Communications
Stakeholders & Partners**

D.O.T.

N-1-1

PSAPs

**Police, Fire,
EMS
Response
Agencies**

**Hospitals,
Poison
Control**

**Media,
Private
Institutions**

**Emergency
Management**

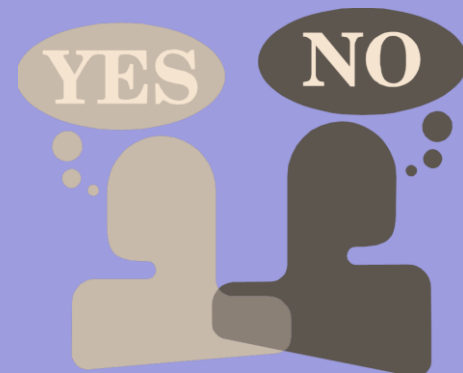
**NLETS,
NOAA,
FEMA, DHS**

**Fusion
Centers**

Service Provider Stakeholders

Who are the origination & access network providers that will be involved?

Are they ready to move forward with NG9-1-1?



Governance Issues

Funding



System Management

**Who will be the designated 9-1-1
system manager?**

**At what levels will contracted vendors
be required?**

Project Management Basics



Formal Project Processes



NG9-1-1 Transition

Evolution not Revolution





Q & A