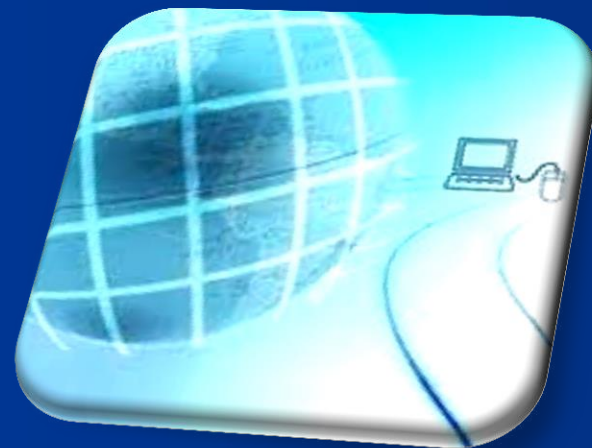




Jay English
Director
Comm. Center & 9-1-1 Services
APCO International

NG9-1-1

Solutions, Planning & Options



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 region**

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.

Examples of 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?

Examples of 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.

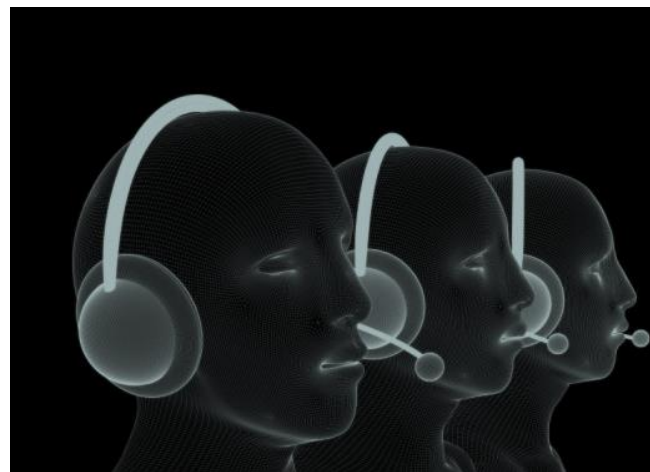


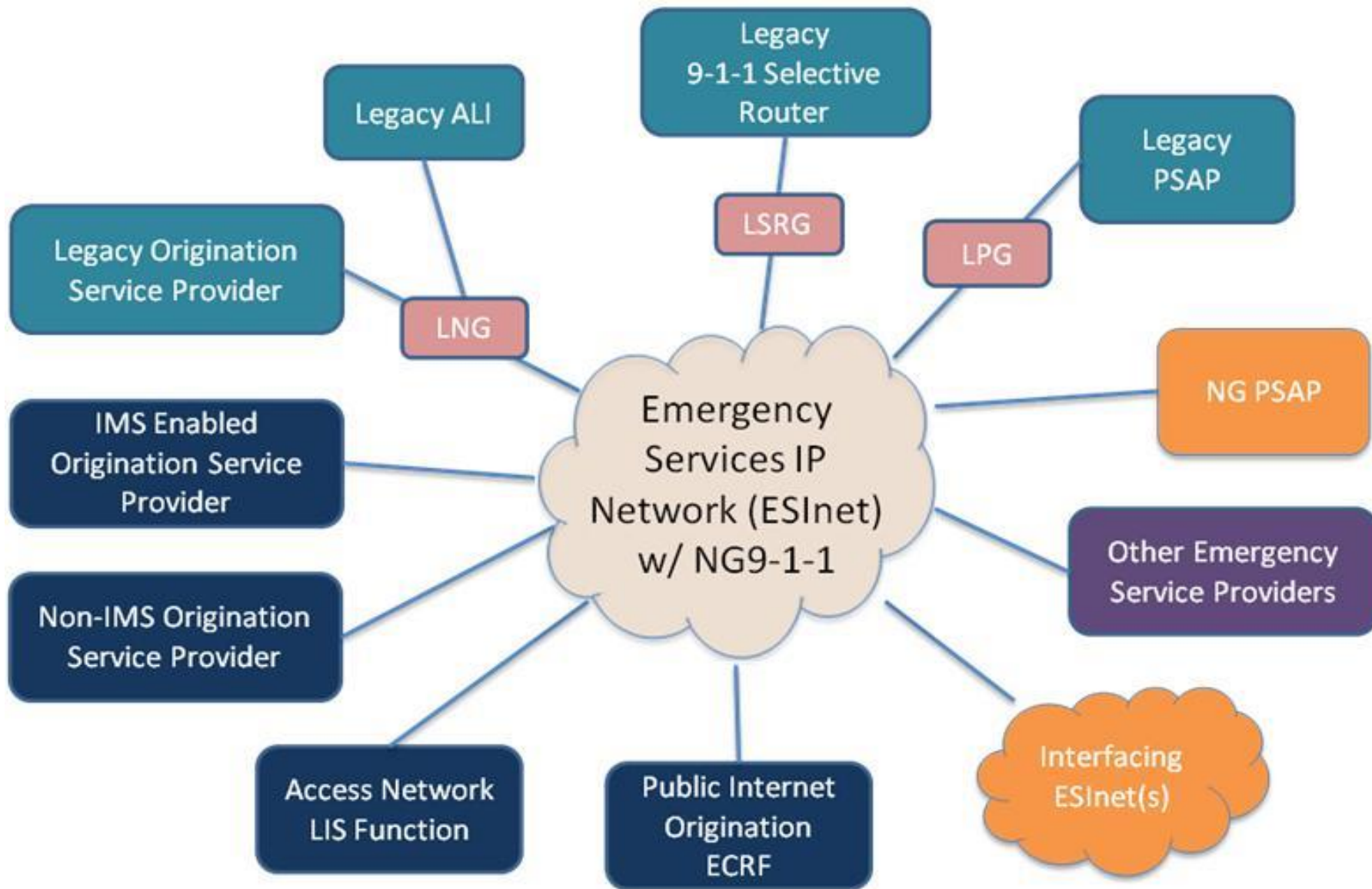
The **IPSR** interface to the PSAP is defined by the ATIS/ESIF Request For Assistance Interface standard (**RFAI**)

**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

High Level Options

**DEPLOY EMERGENCY SERVICE IP NETWORK
(ESINET)**

**IMPLEMENT GEOSPATIAL POLICY- BASED
CALL ROUTING**



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.

NG9-1-1 Call



PIDF-LO +
911 Call URI:
urn:service:sos

Review
Legacy E9-1-1

ANI + Digits 9-1-1

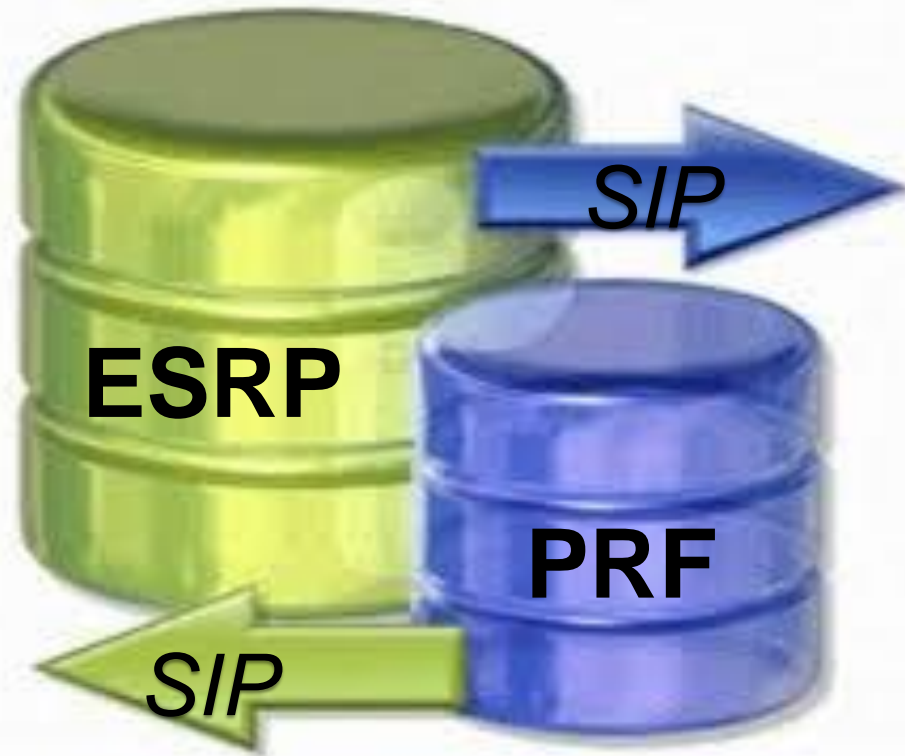
ESRP

Presence **I**nformation **D**ata **F**ormat-**L**ocation **O**bject
Indicates *Presence* (*Are you there?*)
Indicates *Location* (*Where are you?*)

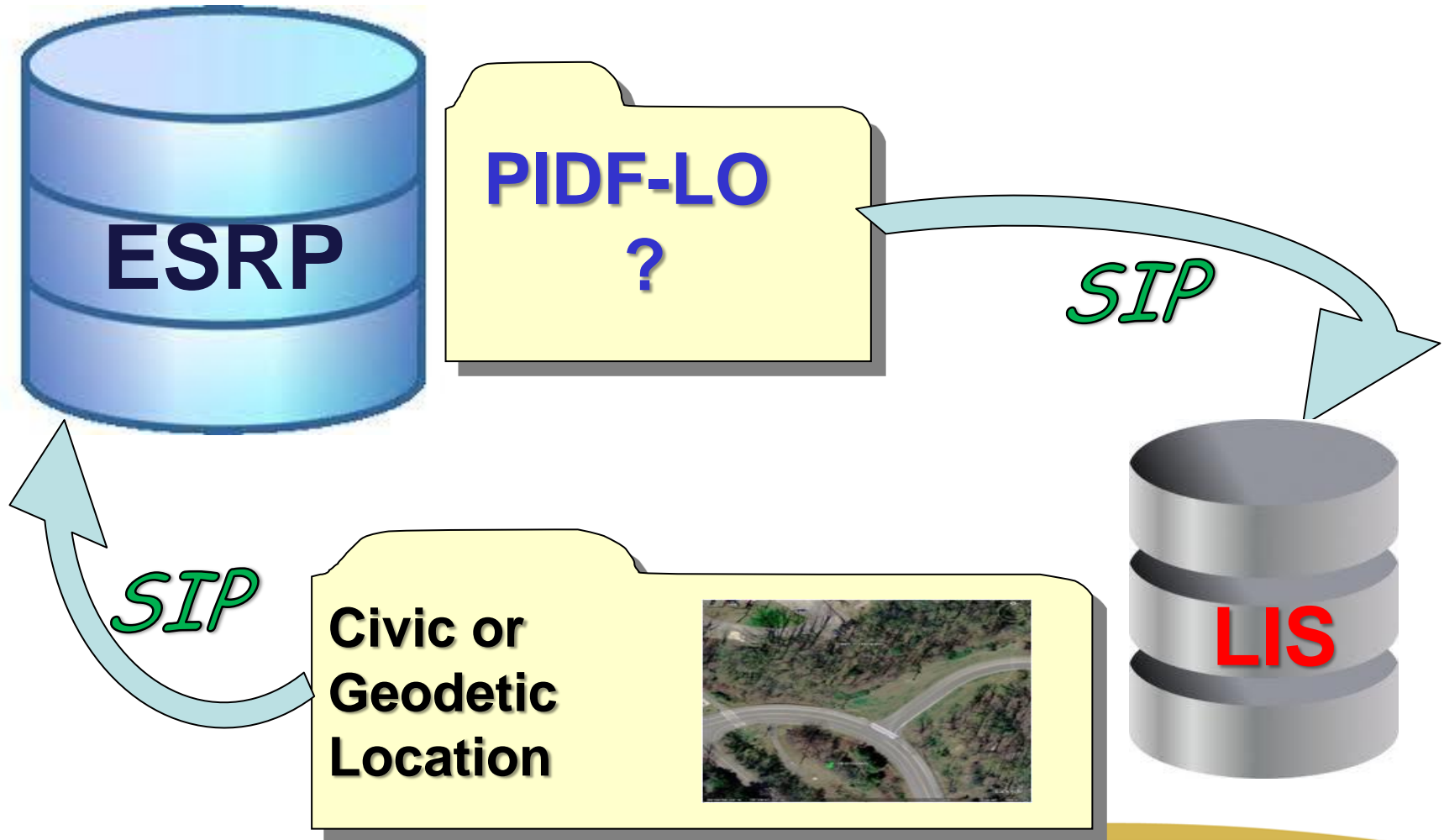
ESRP & PRF

Emergency Service Routing Proxy Policy Routing Function

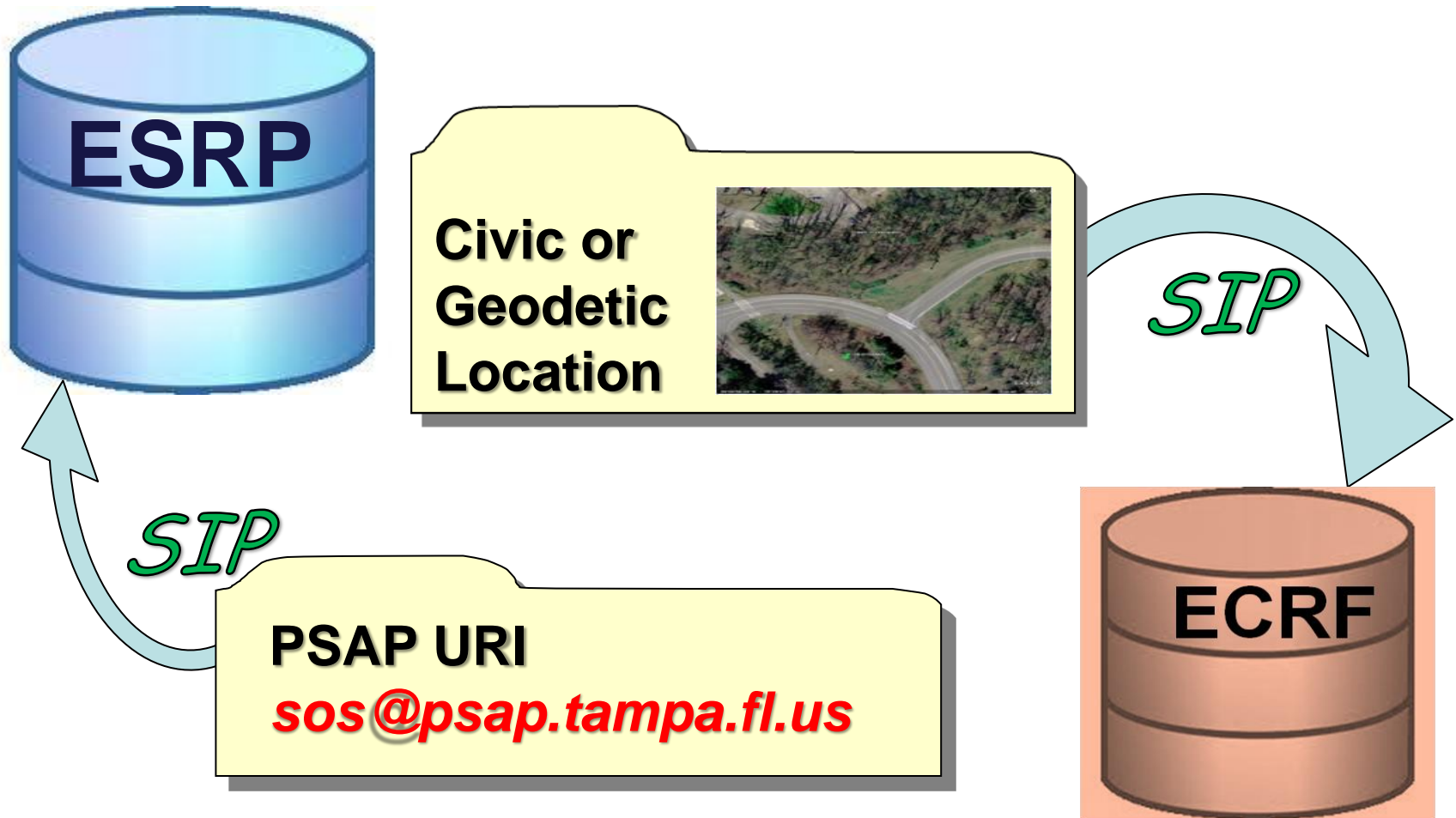
*The
Keys to
the City*



ESRP queries the **LIS** (Location Information Service)



ESRP queries the ECRF (Emergency Call Routing Function)



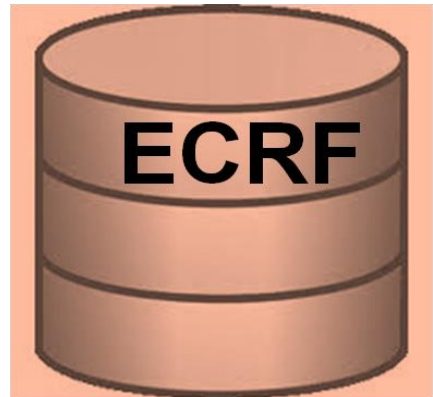
ECRF Magic & LoST Protocol

**Civic or
Geodetic
Location**

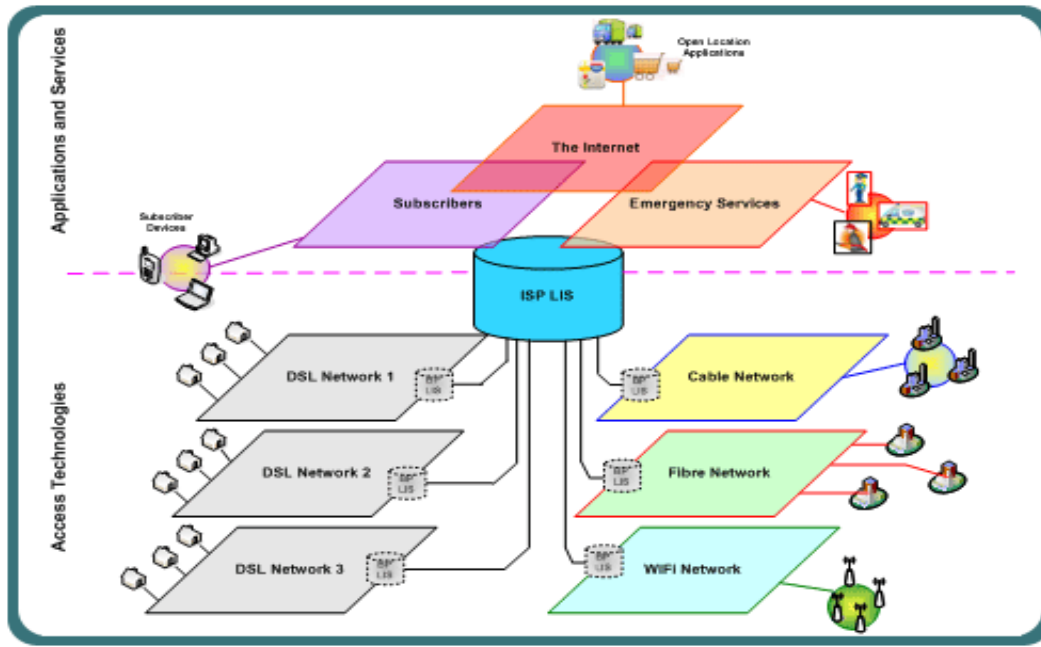


PSAP URI

sos@psap.tampa.fl.us



LIS-Location Information Service



Everything Else

Left side

Apt A
4th floor

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

Border Control Function - BCF

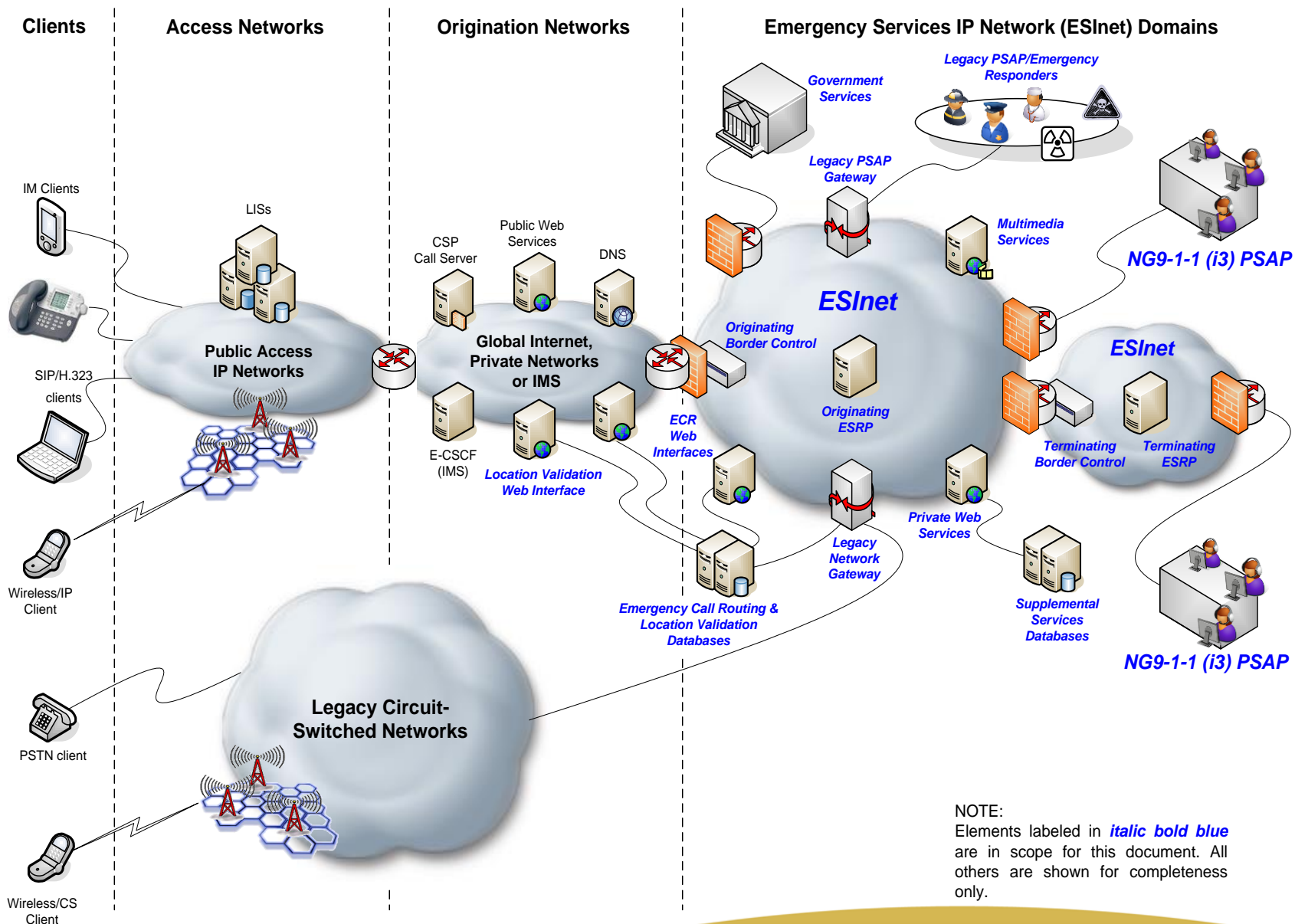


Gateways

Legacy Network Gateway-LNG

Legacy PSAP Gateway-LPG

Legacy Selective Router Gateway-LSRG

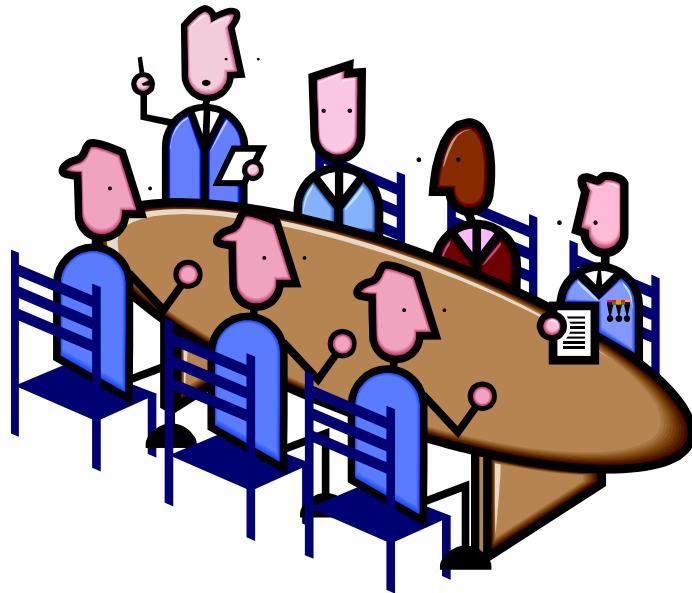


How do you position your
agencies to transition to a
fully featured NG9-1-1
system?

The devil is in the details

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**

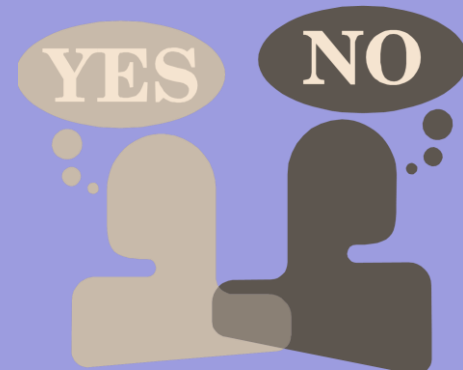
**NLETS,
NOAA,
FEMA, DHS**

**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



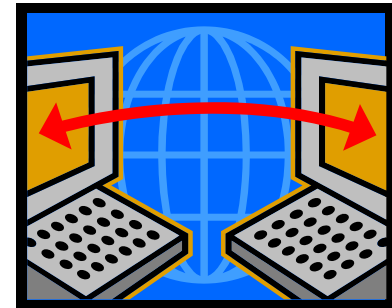
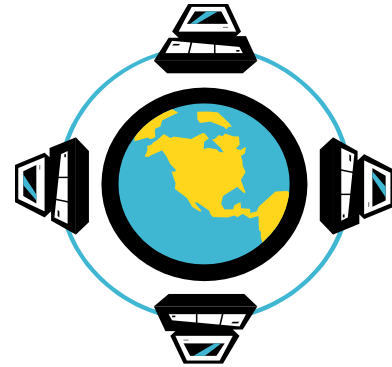
System Management

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

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

What is the Common Denominator During an Emergency?

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



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***



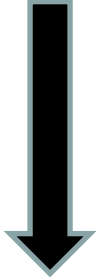
FirstNet

National Public Safety Broadband Network

National Connectivity



Broadband

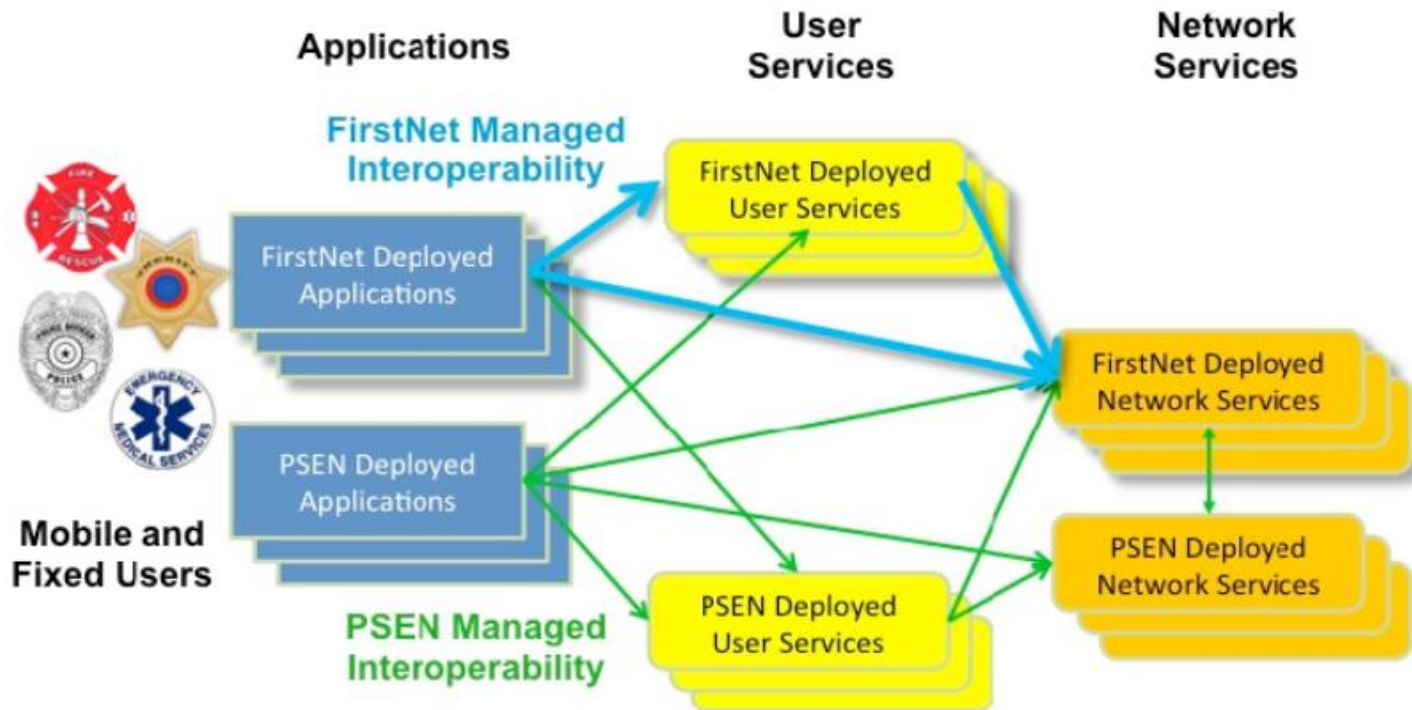


ESInets



**Emergency
Communications
Stakeholders &
Partners**

FirstNet Apps



Examples

- | | | |
|------------------------------------|------------------------------------|---------------------|
| • Advanced multimedia telephone | • Cellular Telephony | • Location |
| • Video | • Video | • Service Discovery |
| • PTT Apps | • Direct-mode PTT (not for Launch) | • DNS |
| • Fire situational awareness, etc. | • Messaging, etc. | • Identity |
| • Computer-Aided Dispatch | | • Dynamic QoS, etc. |

Project Management Basics



Formal Project Processes



NG9-1-1 Transition

Evolution not Revolution





Q & A