



**Office of Information
Technology Services**

The Role of GIS Data in NG9-1-1

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Phone Number

Automatic Number Identification (ANI)



Add Street Address

Automatic Location Identifier (ALI)



Add Emergency Service Zone

Master Street Address Guide (MSAG)



Look up Police, Fire, EMS

Emergency Service Provider
Lookup Table

Current land line call processing

Current cellular call processing



The screenshot displays the 'E911 Lync' software interface. The main map shows a yellow highlighted area with a red boundary and two red dots. The interface includes a top menu bar with 'Main Map', 'ImageLync', 'CAD', and 'Legend'. On the right, there is a search bar 'Enter Address to Locate' and a panel for 'Caller Information' and 'Responders'. The status bar at the bottom shows coordinates and location data.

Caller Information
(618) 920-7911
137 Iowa Ave - 3WSW
VERIZON WIRELESS CALL
BELLEVILLE

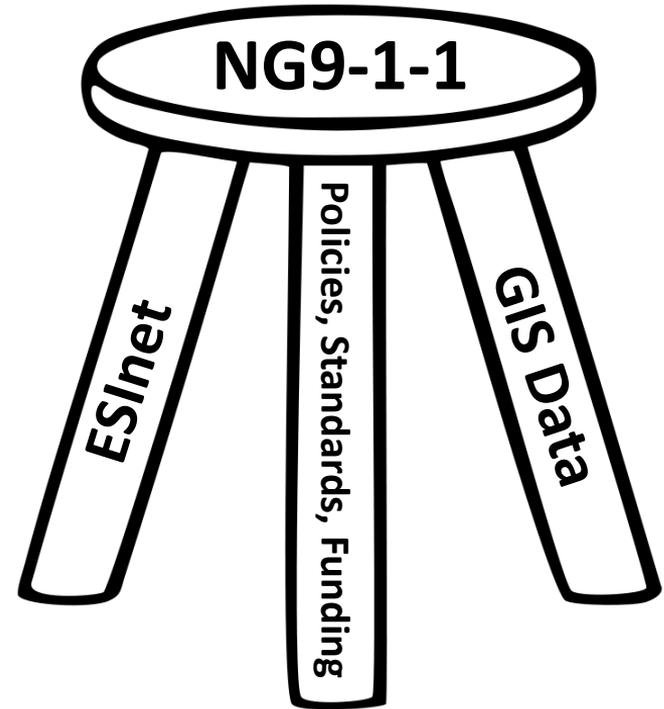
Responders:
VERIFY E911
VERIFY LAW
VERIFY FIRE
VERIFY MEDICAL

Wireless E911 call detected.
Cell Sector Information:
...137 Iowa Ave - 3WSW
Current map reflects caller's location at the time of pressing send button on wireless phone.

8:65 AM | 243 GLEN ADOVE BLVD | ESN: 142 | X: 89.9375 Y: 38.54738 | DHS X: 89.9615 DHS Y: 38.3251 | TWP: St Clair Township

What is NG9-1-1?

- Uses IP protocol
- Also supports texts, photos, video
- Works with any connected device
- Interoperable at county, region, state and federal
- Three core NG9-1-1 components
 - ESInet
 - GIS data
 - Policies, Standards, Funding



A map of the United States is shown against a black background. The map is filled with a complex, glowing network of white and grey lines and nodes, representing a GIS data layer such as a road network or utility grid. The text "GIS data?" is overlaid in the center of the map.

GIS data?



Phone Number
and **X, Y**
(no address)



Add dispatchable
street address

NYS Address Points
NYS Street Centerlines

An aerial photograph of a residential street with several yellow circular markers indicating address points. A black 'X' marker is placed on the street. The map is enclosed in a blue border.

**Future NG9-1-1
call processing**



Add PSAP and
responders

PSAP Boundaries
**Fire, Police, and EMS
Boundaries**

A map showing colored regions representing PSAP boundaries: red for Fire, blue for Police, and green for EMS. Icons for a fire truck, an ambulance, and a police car are placed on the map. A black 'X' marker is also present. The map is enclosed in a blue border.

GIS Data Standards

- Required for NG9-1-1 to work
- NENA is developing standards for NG9-1-1 GIS Data
 - **NENA-STA-010**, *NENA Detailed Functional and Interface Standards for the NENA i3 Solution, Appendix B*
 - **NENA-STA-006**, *NENA Standards for NG9-1-1 GIS Data Model*
- Standards will:
 - Allow exchange of data with local, regional, state and federal agencies
 - Allow interoperability
 - Allows call transfers to anywhere

What is the NG9-1-1 GIS Data Model?

- Defines the GIS data layers in a NG9-1-1 System that support:
 - Location Validation
 - Geospatial Call Routing
 - Dispatch Routing
 - Public Safety Mapping Applications
- Required data structure for GIS data exchange in NG9-1-1
- May use any internal GIS data model for daily maintenance
 - Must export data from local GIS data model into the NG9-1-1 GIS Data Model
- Allows backwards compatibility with existing E9-1-1 systems

GIS Data Layers in a NG9-1-1 System

- REQUIRED GIS data layers:
 - Road Centerlines
 - PSAP Boundary
 - Emergency Service Boundary (must include separate layers for Law, Fire, and Emergency Medical Service)
 - Site/Structure Address Points
- Absolutely necessary for:
 - Location Validation Function (LVF)
 - Emergency Call Routing Function (ECRF)
 - Call taking
 - Dispatch operations

GIS Data Layers in a NG9-1-1 System

- STRONGLY RECOMMENDED GIS data layers:
 - Street Name Alias Table
 - Landmark Name Part Table
 - Complete Landmark Name Alias Table
 - States or Equivalent
 - Counties or Equivalent
 - Incorporated Municipality Boundary
 - Unincorporated Community Boundary
 - Neighborhood Community Boundary
 - Other Emergency Service Boundaries (e.g. Poison Control, Forest Service, Coast Guard, Animal Control, etc.)
- May assist or improve the functionality of the LVF and ECRF
- Extremely beneficial for call taking and dispatch operations

GIS Data Layers in a NG9-1-1 System

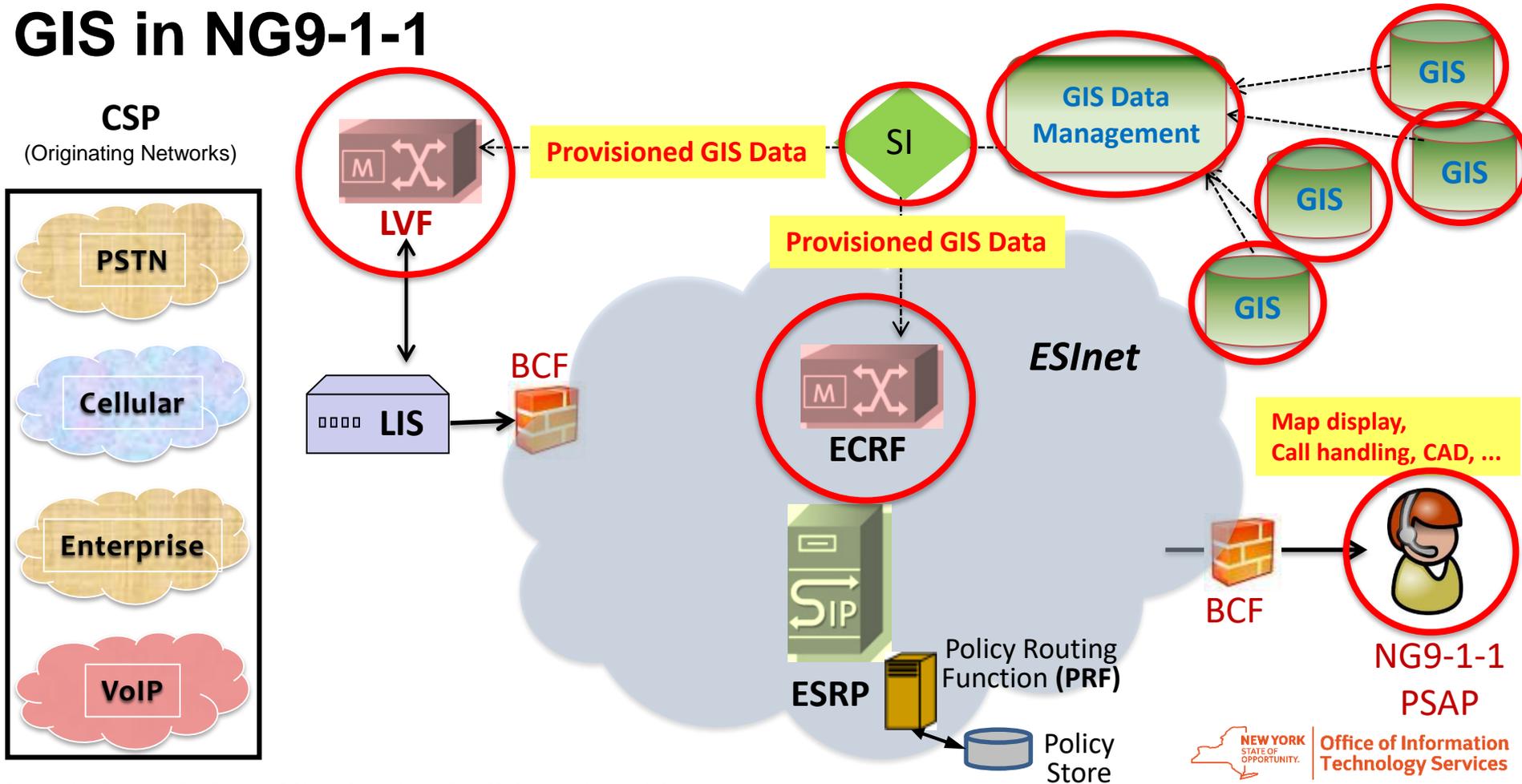
- Other RECOMMENDED GIS data layers:
 - Railroad Centerlines
 - Hydrology Line
 - Hydrology Polygon
 - Cell Site Location
 - Mile Marker Location
- Very useful for NG9-1-1 and E9-1-1 call taking and dispatch operations

Essential Vocabulary

NG9-1-1 Acronyms

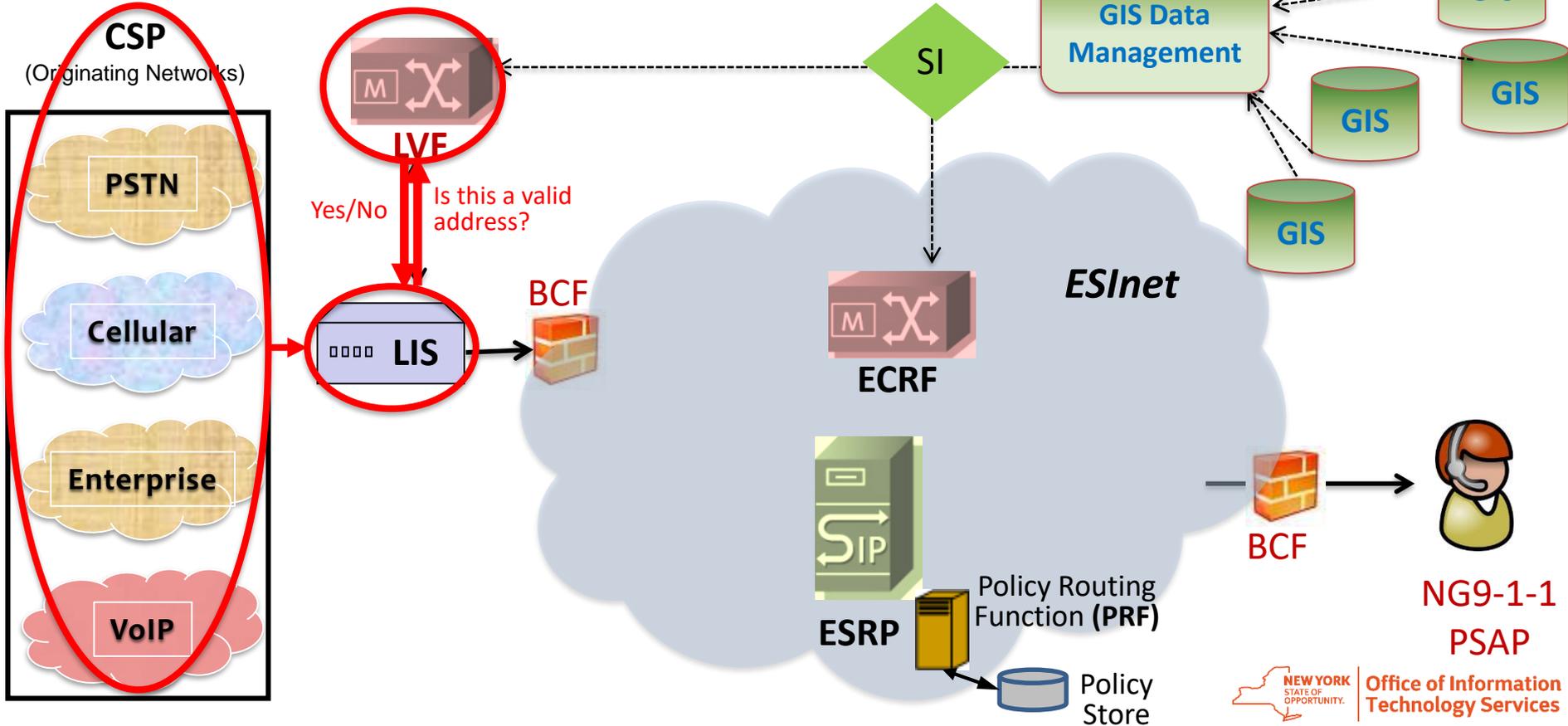
- **BCF:** Border Control Function
- **CSP:** Customer Services Provider
- **ECRF:** Emergency Call Routing Function
- **ESRP:** Emergency Services Routing Proxy
- **LIS:** Location Information Server
- **LVF:** Location Validation Function
- **PRF:** Policy Routing Function
- **SI:** Spatial Interface
- **VoIP:** Voice Over Internet Protocol
- **PSTN:** Public Switched Telephone Network

GIS in NG9-1-1

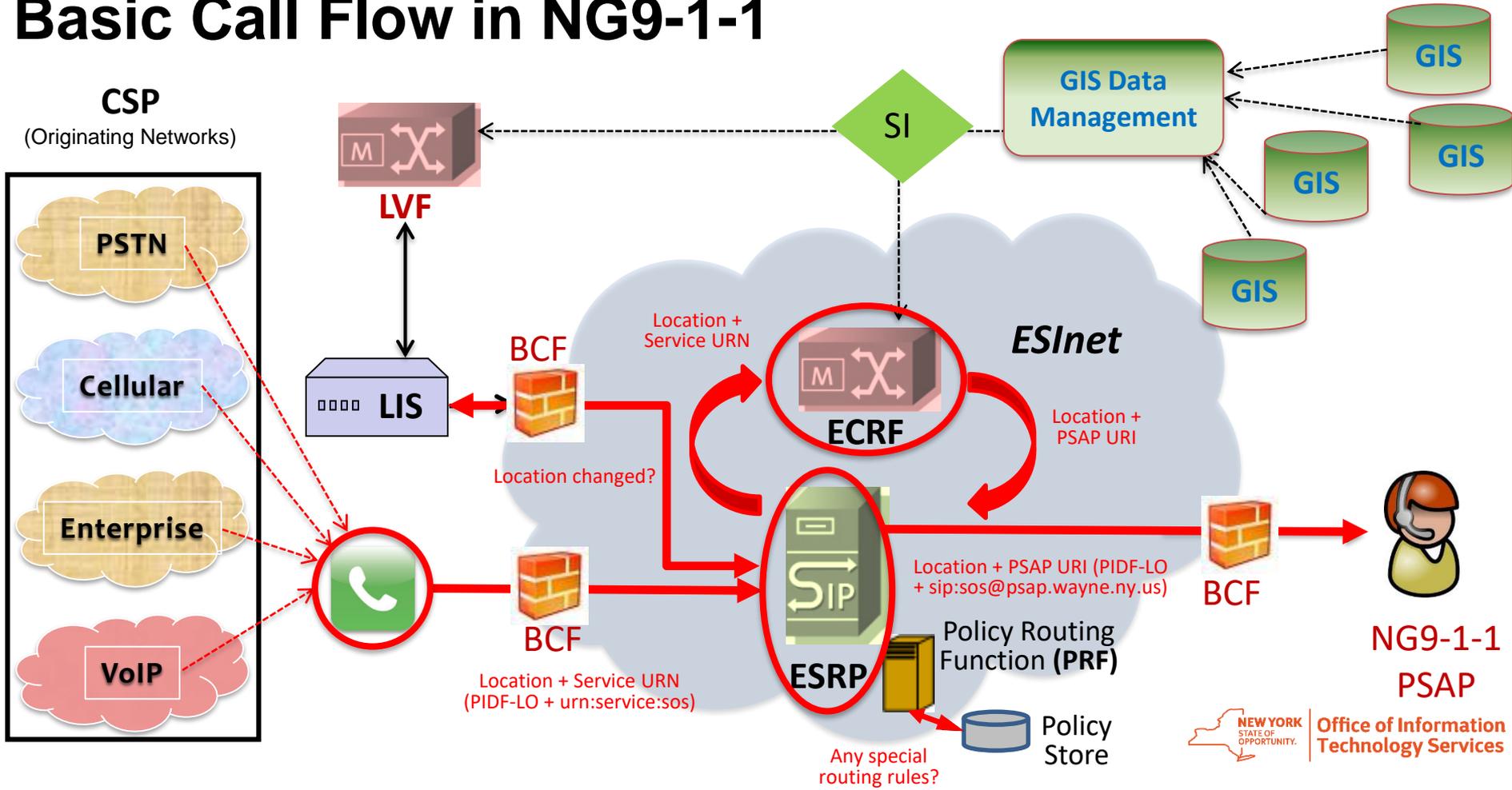


Source: Marc Berryman, *The Future of GIS in the 9-1-1 World* (NENA, 2016). Used with permission.

Before a 9-1-1 Call is Ever Made



Basic Call Flow in NG9-1-1



Thank you!

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