The Role of GIS Data in NG9-1-1

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Current land line call processing

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

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Current cellular call processing

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
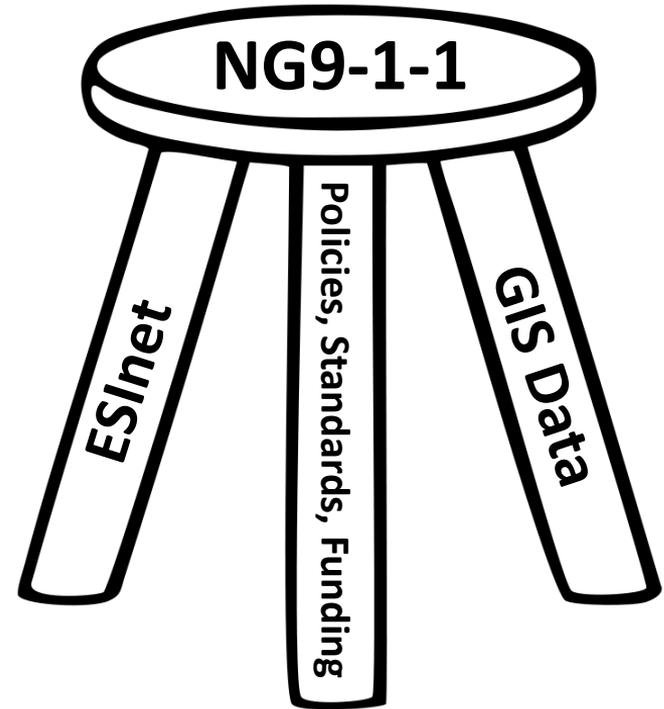
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GIS data?

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

Add dispatchable street address

NYS Address Points
NYS Street Centerlines

Add PSAP and responders

PSAP Boundaries
Fire, Police, and EMS Boundaries

Future NG9-1-1 call processing

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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

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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

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GIS Data Layers in a NG9-1-1 System

- REQUIRED GIS data layers:
  - o Road Centerlines
  - o PSAP Boundary
  - o Emergency Service Boundary (must include separate layers for Law, Fire, and Emergency Medical Service)
  - o Site/Structure Address Points

- Absolutely necessary for:
  - o Location Validation Function (LVF)
  - o Emergency Call Routing Function (ECRF)
  - o Call taking
  - o Dispatch operations

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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 Equivalents
    - Counties or Equivalents
    - 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

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GIS Data Layers in a NG9-1-1 System

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

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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

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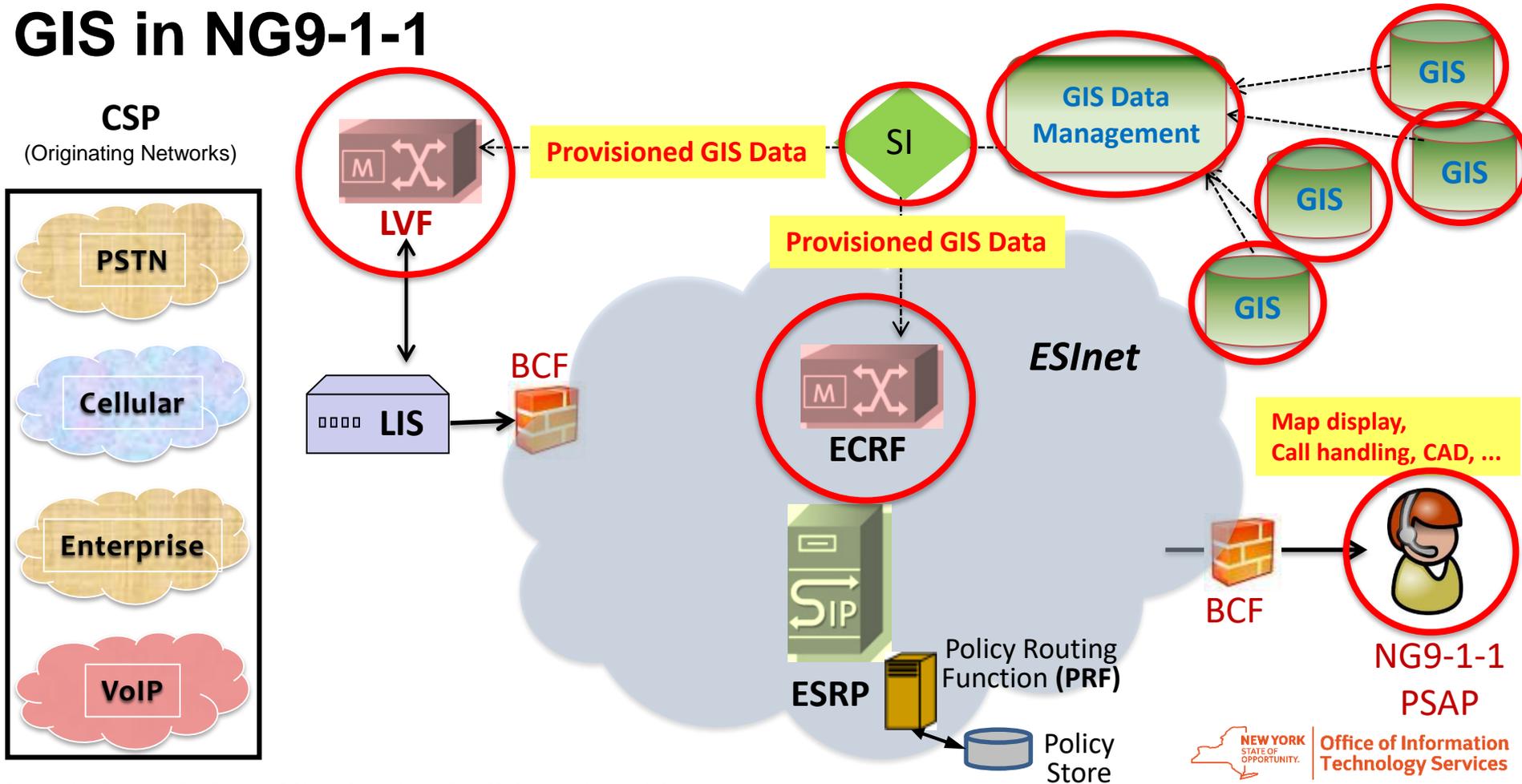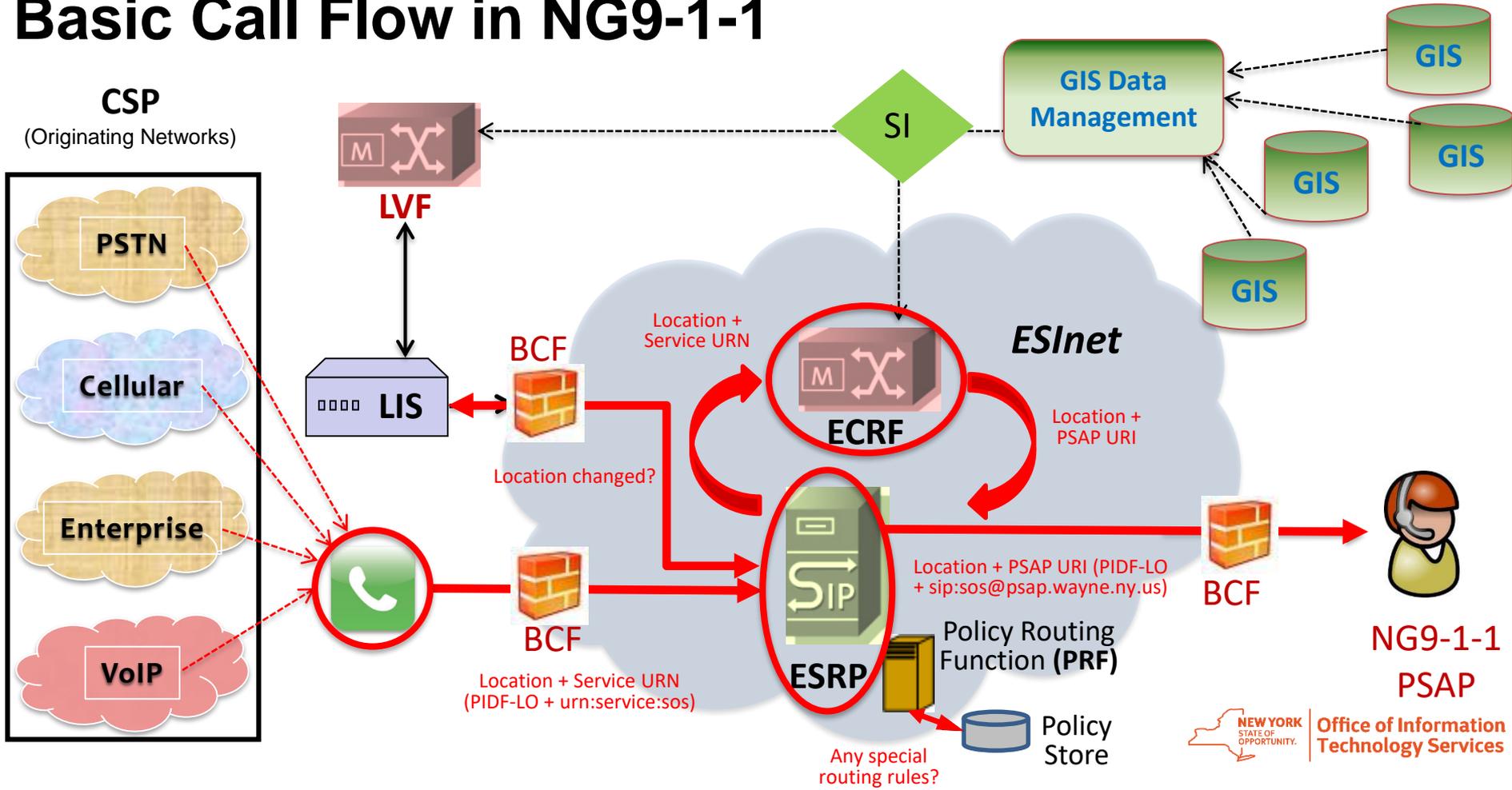
GIS in NG9-1-1

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
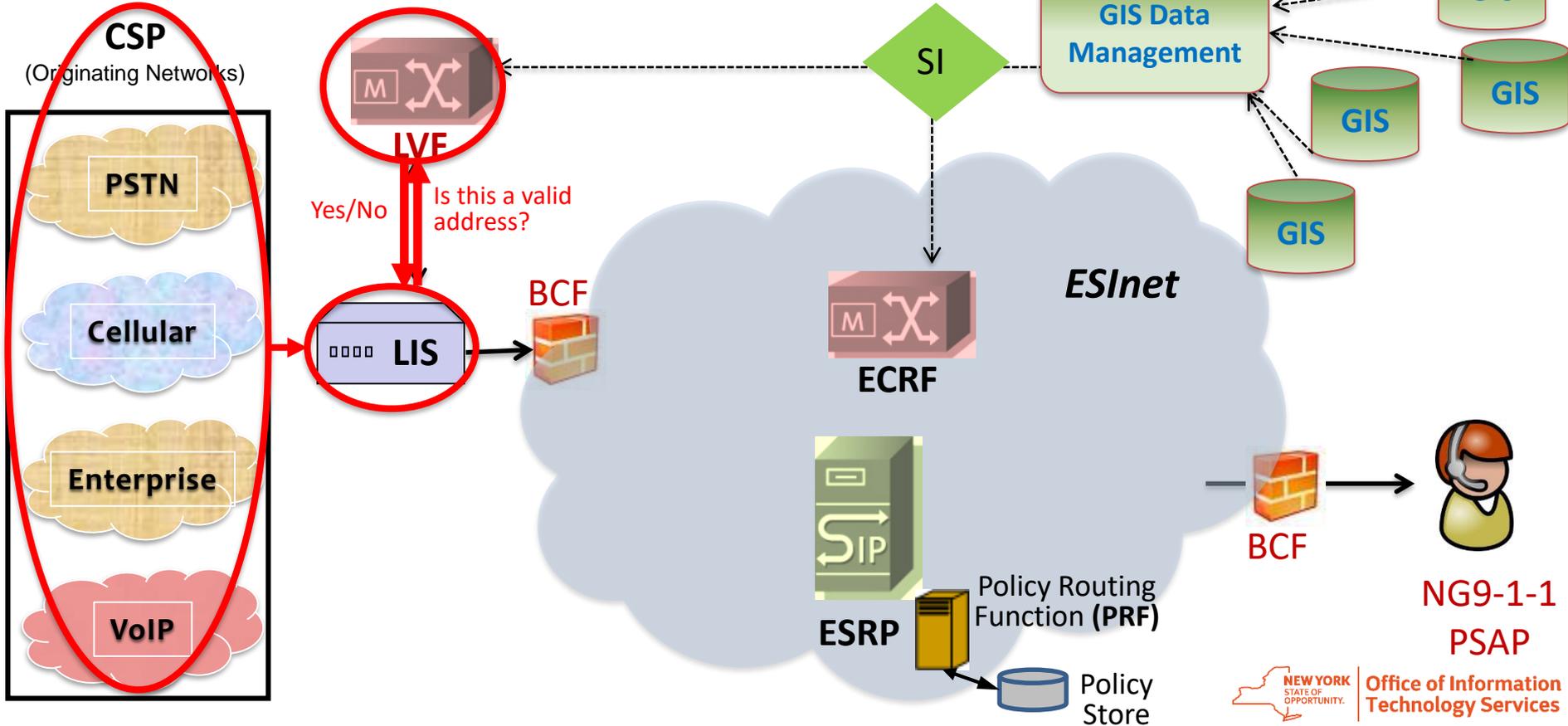
Basic Call Flow in NG9-1-1

Thank you!

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