
NENA
THE
9·1·1
ASSOCIATION

GIS and NG9-1-1

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NENA History

- 30 years as a non-profit Association for 9-1-1
- 7000+ members from Public Safety and the 9-1-1 industry
- Focused on 9-1-1 systems and service evolution
- The only professional organization solely focused on 9-1-1 policy, technology, operations, and education issues

NENA and NG9-1-1

- NG9-1-1 conceptualized in 2001
- Began Requirements development in 2003
- Began technical development in 2004
- NENA is the primary standards development organization for NG9-1-1
- Completed many standards and documents to date

What's Driving NG9-1-1

- **Newer Technologies/Services**
  - Text, Image, Video, Telematics, Sensors, Subscriber Info, Emergency Location Info
- **Need to "Mainstream" 9-1-1 Technology**
- **Improve Survivability**
  - Network Resilience, Virtual PSAPs
- **Improve Interoperability and Information Sharing**

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How NG9-1-1 is Different

- **Technology:**
  - IP Packet Based vs Circuit Switched

- **Functions:**
  - Replicates E9-1-1 capabilities
  - Adds new capabilities
  - Wide ranging additional data options
  - GIS based instead of tabular data for location validation and routing control

- **No longer a ‘local’ service:**
  - Interoperability at county, region, state and national levels

NG9-1-1 Basics

NG9-1-1 System

=

Procedures +

Databases +

i3 Architecture +

ESInet within IP network

Terminology

- **Emergency Services IP Network (ESInet)**
  - A privately managed IP transport network that may be shared by multiple agencies and emergency applications
- **i3 Standard** requirements, architecture and functions
  - Including the Emergency Services Routing Proxy (ESRP) and the Emergency Call Routing Function (ECRF).
- **NG9-1-1**
  - The set of network elements, software applications, databases, CPE components, and operations & management procedures required to provide Next Generation emergency services.

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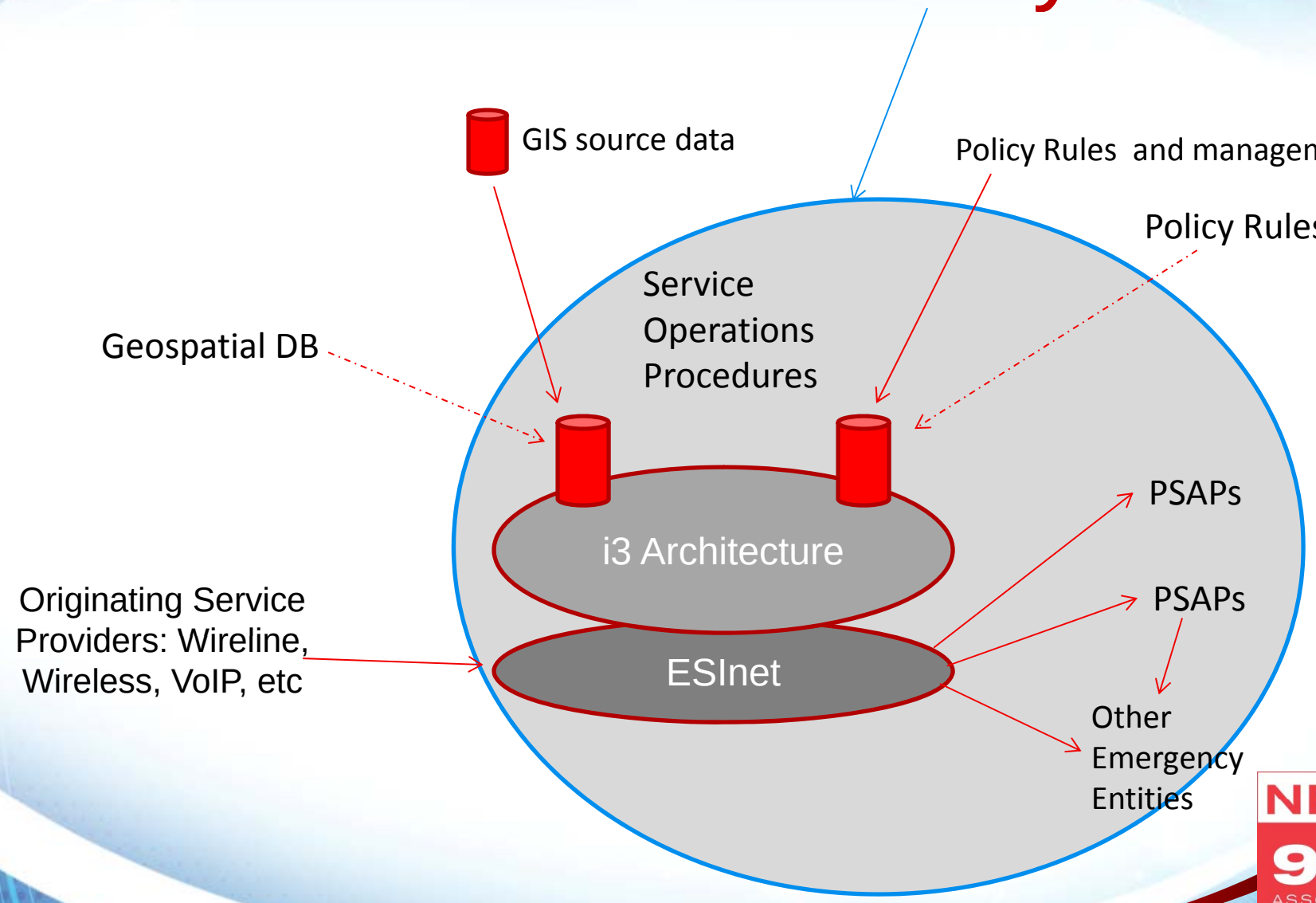
NENA NG9-1-1 System



GIS in NG9-1-1

- **GIS Source Data:**
  - acquired from governmental sources

- **Geospatial Data Uses in NG9-1-1:**
  - Location validation, incl `publication' of GIS data
  - Routing control
  - Routing modification by Policy Routing Function
  - Call transfer routing
  - Mapping of call location
  - Acquisition of additional location related data

- **Beyond NG9-1-1:**
  - CAD matching for dispatch functions

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GIS in NG9-1-1

- **GIS Source Data:**
  - often acquired from governmental sources and levels

- **Considerations**
  - **basic addressing standards**
  - **common GIS Standards**
  - **Consistency across broad geographics**
  - **Edge matching between sources**
  - **Timeliness of updates**
  - **Common management techniques**

GIS in NG9-1-1

- **Geospatial Data Uses in NG9-1-1:**

  - **Location validation, incl `publication' of GIS data**
  - **Routing control**
  - **Routing modification by Policy Routing Function**
  - **Call transfer routing**
  - **Mapping of call location**
  - **Acquisition of additional location related data**

GIS in NG9-1-1

- **Beyond NG9-1-1:**
  - **CAD matching for dispatch functions**
  - **Provision of location based data to:**
    - **Responders**
    - **Other organizations, such as trauma centers, emergency operations centers, DHS, etc**
    - **Standards such as NIEM XML**

GIS in NG9-1-1

- **Governance is fundamental**
  - **9-1-1 has been a local, largely County based service**
  - **Due to regional, state, and national needs, NG9-1-1 needs to be treated from a regional or state level**
  - **There are major economic considerations**
    - **NG9-1-1 costs lower if regional or state based**
    - **GIS large area contracting**
    - **regional NG9-1-1 data management**
  - **GIS organizations need to push government enablers toward actions on above realizations**
    CIOs, State level governmental IT groups, NGA, Sheriffs Associations, and so on

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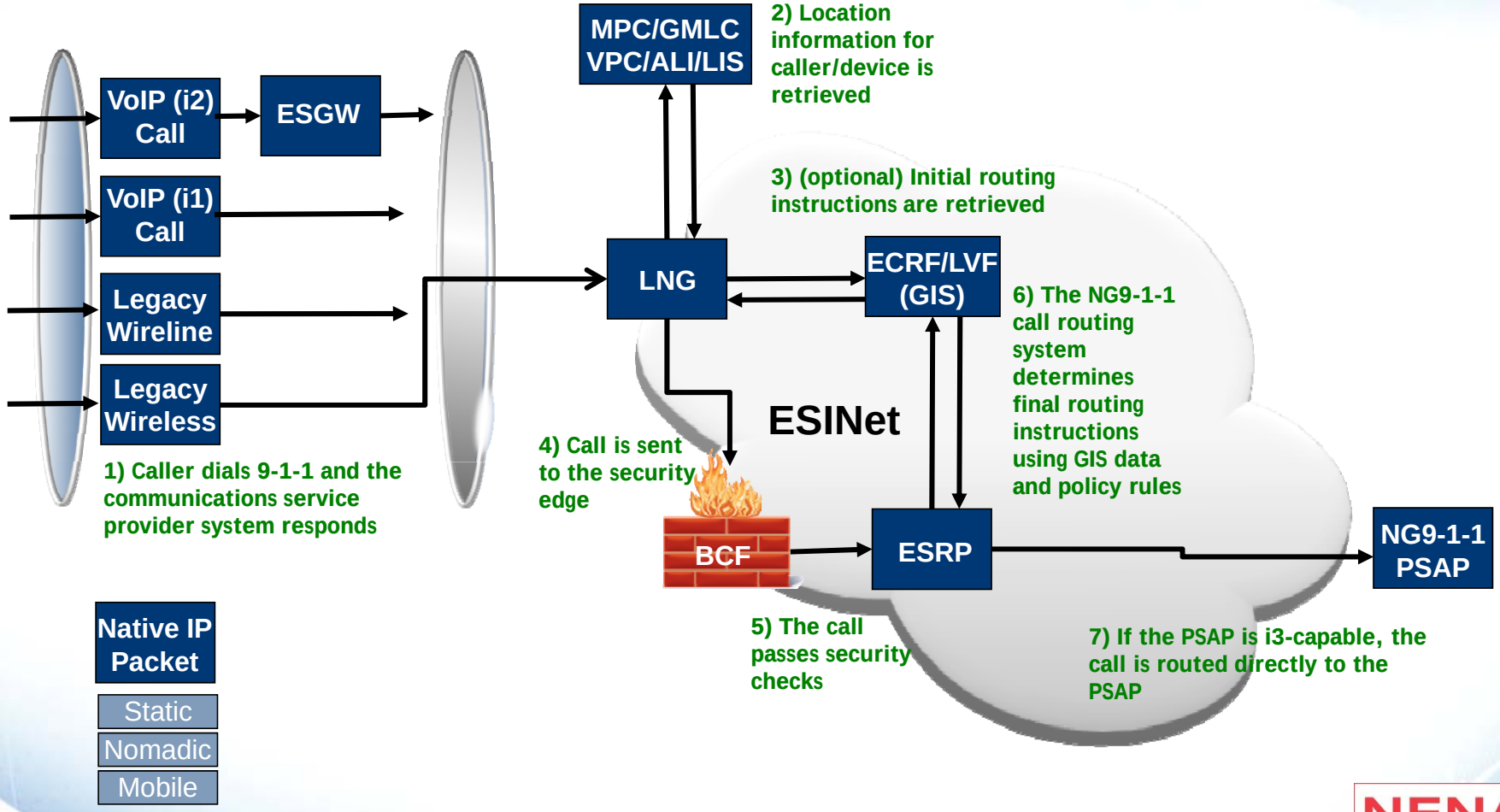
NG9-1-1 Call Flow – Legacy Example

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The Nature of NG9-1-1

- Designed to support interoperability
- Designed with open standards
- Designed for and enables open competition, by component , through interface standards
- Enables a transition to competitive service provider environment
- Causes a need for regulatory (and legislative) change

NG9-1-1 Added Features

- GIS based routing control
- Location data transported with the call
- Additional types of calls and messaging
- Additional data
- Virtual PSAP capabilities
- Added alternate routing options (ex: sensing PSAP status)
- Direct control of call management [PRF]
- Facilitates response and incident management

NG9-1-1 User Benefits

Opportunities for the PSAPs…

- Text/IM to 9-1-1
- Files to 9-1-1 , such as photos or video clips
- Streaming video
- Telematics and sensor data
- Nomadic and/or mobile call taker workstations
- PSAP “on-the-fly” or Virtual PSAP
- Policy-based alternate routing with new options
- Additional Policy-based routing for:
  - Language preference of caller
  - Type of technology in use (IM, Sensor, Satellite phone, etc.)

NG9-1-1 User Benefits

Opportunities for other emergency entities…

Dispatch, field responders, trauma centers, hospitals, EOCs, DoT, DHS, FEMA…

- Informative data to dispatch and field responders
- National standards for data interfaces
- Adaptable for future needs
- Text/IM via 9-1-1
- Files via 9-1-1 , such as photos or video clips
- Streaming video
- Telematics data
- Sensor data

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