

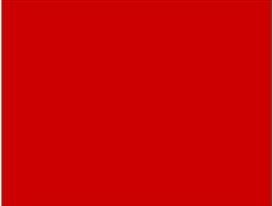
# IOWA STATEWIDE NG9-1-1 GIS STANDARDS

Presented by Iowa HSEMD and



**GeoComm**

May 2014



# Agenda

Welcome and Introductions

Review Project Scope

Overview of NG9-1-1

NG9-1-1 Standards Development

# Iowa HSEMD GIS Project Team

Agency	Project Team Member	Title
Iowa HSEMD	Barbara Vos	E911 Program Manager & Project Manager
Iowa HSEMD GIS	Jon Paoli	GIS Coordinator
Hardin and Franklin Counties	Micah Cutler	GIS Coordinator
Johnson County GIS	Jay Geisen	GIS Specialist
Des Moines GIS	Aaron Greiner	GIS Analyst
West Des Moines, GIS	Lawrence Hartpence	GIS Analyst
Dubuque County GIS	Jeff Miller	GIS Coordinator
Humboldt County 9-1-1 GIS	Cherese Sexe	9-1-1 System Administrator
Scott County GIS	Ray Weiser	GIS Coordinator

# GeoComm Project Team



**Deb Rozeboom** | GIS Consultant

Geo-Comm, Inc. St. Cloud, MN

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[drozeboom@geo-comm.com](mailto:drozeboom@geo-comm.com)

**▶ Deb Rozeboom, ENP, PMP, GISP – Project Manager / GIS Consultant**

▶ Certifications:

- Emergency Number Professional (ENP)
- Project Management Professional (PMP)
- Geographic Information Systems Professional (GISP)

▶ 10 Years Public Safety GIS Experience

▶ Master's Certificate in GIS

▶ NENA NG9-1-1 GIS Data Model Workgroup Member

**GeoComm**

# GeoComm Project Team



**Christy Hayes** | Project Manager

Geo-Comm, Inc. St. Cloud, MN

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[chayes@geo-comm.com](mailto:chayes@geo-comm.com)

**Christy Hayes, ENP, PMP – Project Manager**

## Certifications:

- Emergency Number Professional (ENP)
- Project Management Professional (PMP)

12 Years Public Safety Experience

3 years in public safety consulting

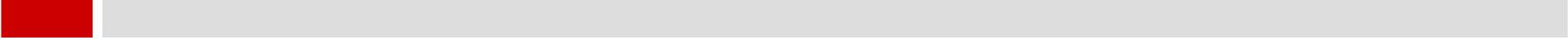
9 years at Mid-America Regional Council in Kansas City, MO

# Project Scope

GeoComm will assist the State of Iowa HSEMD in establishing statewide NG9-1-1 GIS standards and assess the existing GIS map data layers at a local level to determine suitability for use in the State of Iowa's NG9-1-1 system.



# Project Scope and Approach



Project Initiation

NG9-1-1 Educational Campaign

NG9-1-1 GIS Standards Development

NG9-1-1 GIS Standards Rollout

GIS Data Gathering and Assessment

Final Report and Future Phase Planning

# Project Timeline

<b>Deliverables</b>	<b>Due Date</b>
<b>NG9-1-1 GIS Standards Development</b>	June 4
<b>NG9-1-1 GIS Standards Rollout</b>	June 24-June 26
<b>GIS Data Gathering and Assessment</b> <input type="checkbox"/> Collection of county GIS data will begin <input type="checkbox"/> Conference calls with the counties following the delivery of the analysis report, if requested	Early July September 29 – November 18
<b>Final project report delivered and presented</b>	January 14, 2015

# What have you heard?



**Gain a fundamental understanding of the roles GIS data and geospatially enabled applications play in NG9-1-1**

# GIS Use in Public Safety Communications

## Today...and Tomorrow

9-1-1 System	Usage	GIS Data Quality Needed	Frequency of GIS Data Updates
Enhanced 9-1-1 (Today)	<b>Tactical</b> Locating 911 Calls Locating CAD Incidents Automatic Vehicle Location Unit Recommendation Routing from "A" to "B"	Near Perfect Preferred	As Frequent as Possible
NG9-1-1	<b>911 Call Delivery</b> Validation of Service Orders Call Routing	Near Perfect Critical	Near Real-Time

# NG9-1-1 in a Nutshell

- Region-wide or statewide IP communications networks
  - ▣ Emergency Services IP Network (ESInet)
- Voice, call back number, location information – all data – sent with call and delivered to the PSAP
- Standards-based to allow ESInets to be interconnected
  - ▣ Imagine call transfers from one end of Idaho to the other, or Florida to Oregon for that matter...
- Immediately accommodates new technologies as they emerge
- Allows text, video, images, telematics, etc. to be transmitted to the PSAP; could allow data to pass from the PSAP to field responders and/or to emergency care facilities

# IETF / SIP / PIDF-LO

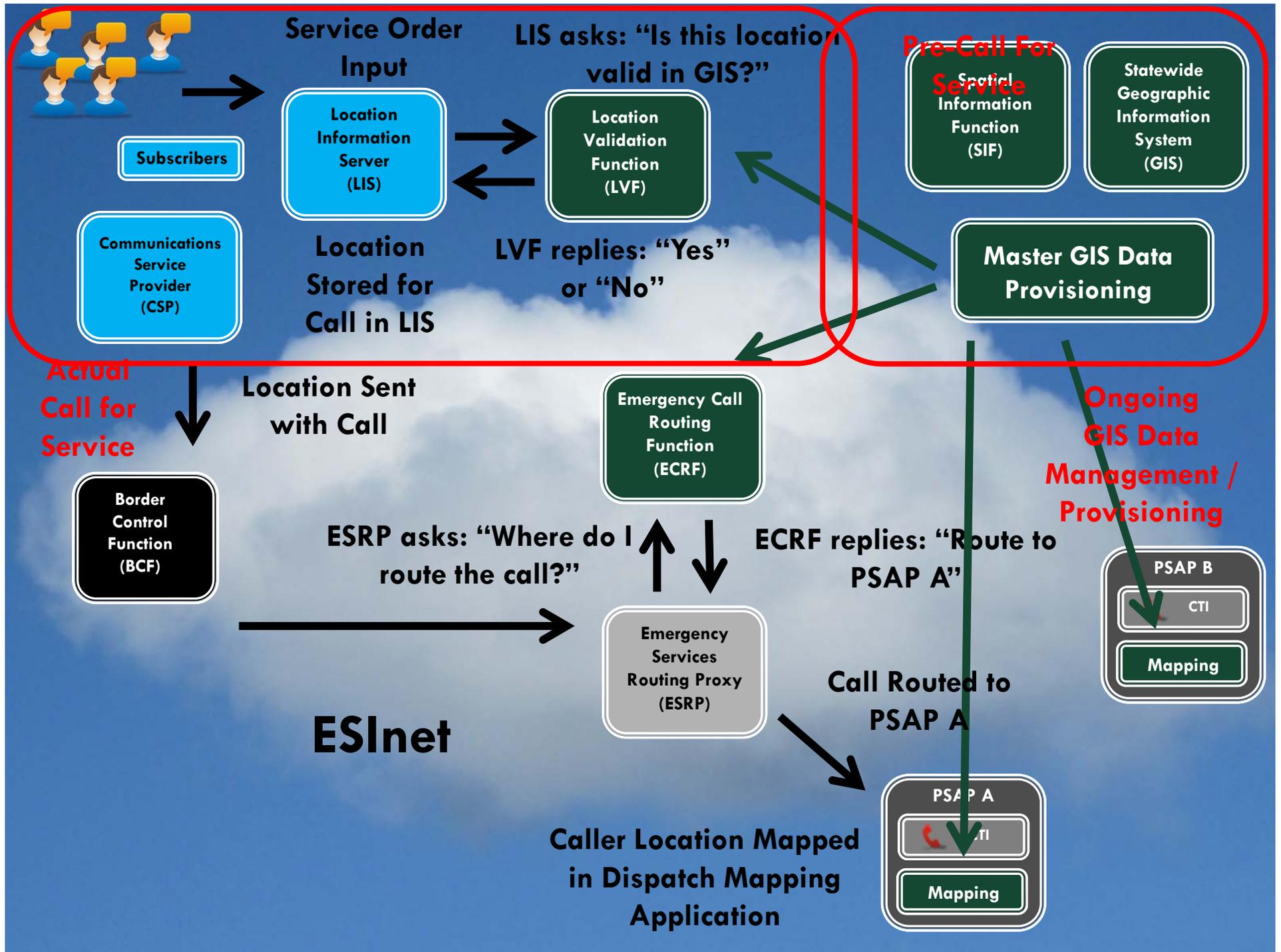
- IETF
  - Internet Engineering Task Force
- SIP
  - Session Initiation Protocol
- PIDF-LO
  - Presence Information Data Format – **Location** Object
    - In computer and telecommunications networks, presence information is a status indicator that conveys ability and willingness of a potential communication partner to communicate



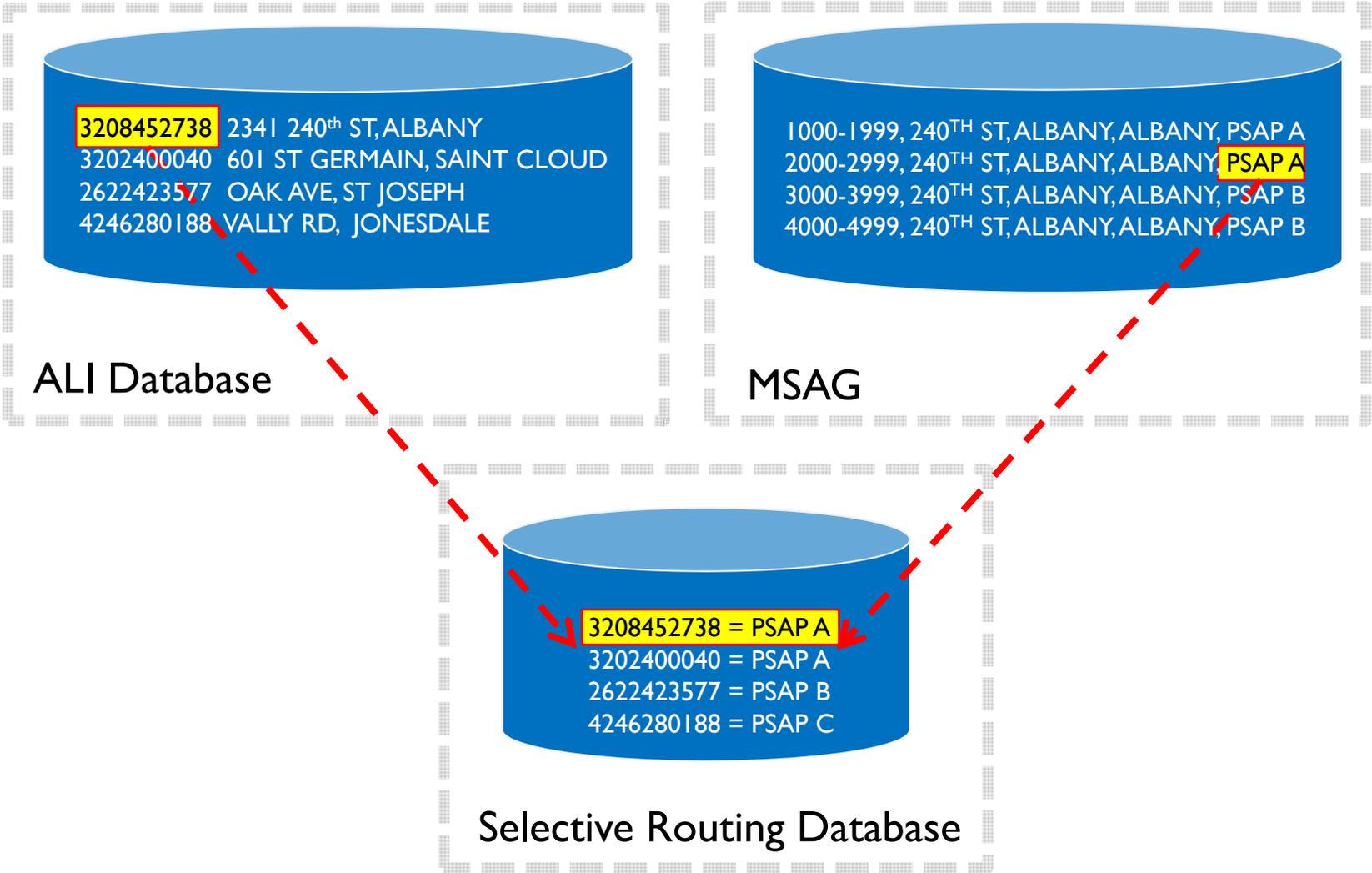
***SIP message is the data stream and PIDF-LO is the portion of SIP message containing caller location***

# NENA'S Baseline NG9-1-1 GIS "Touch Points"

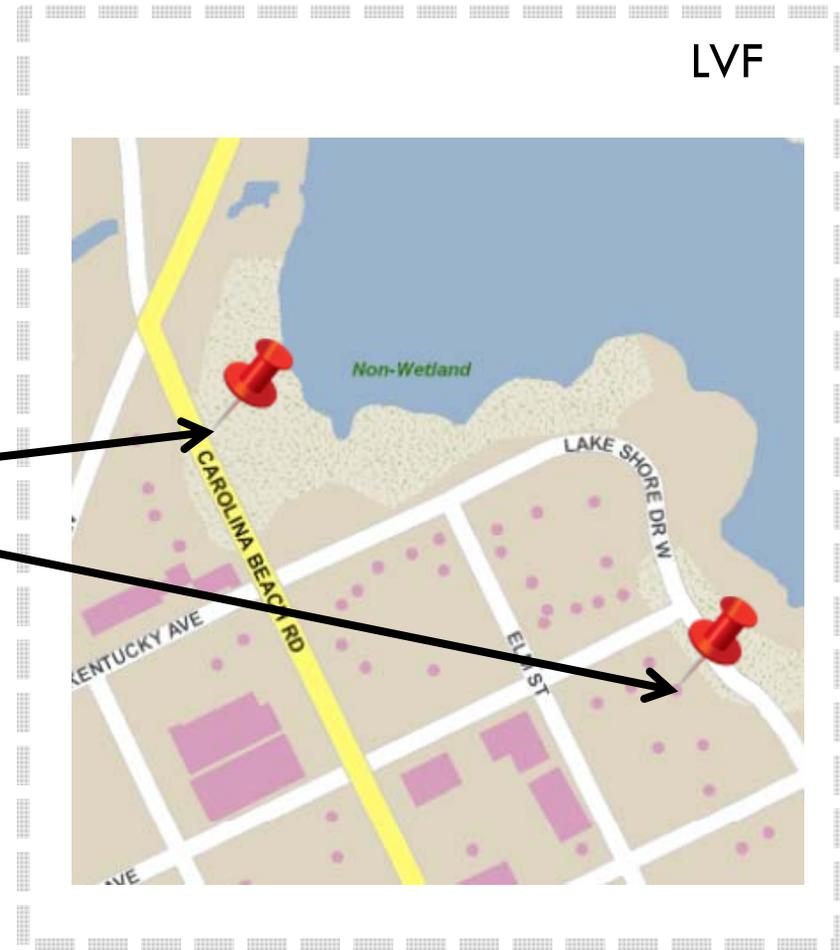
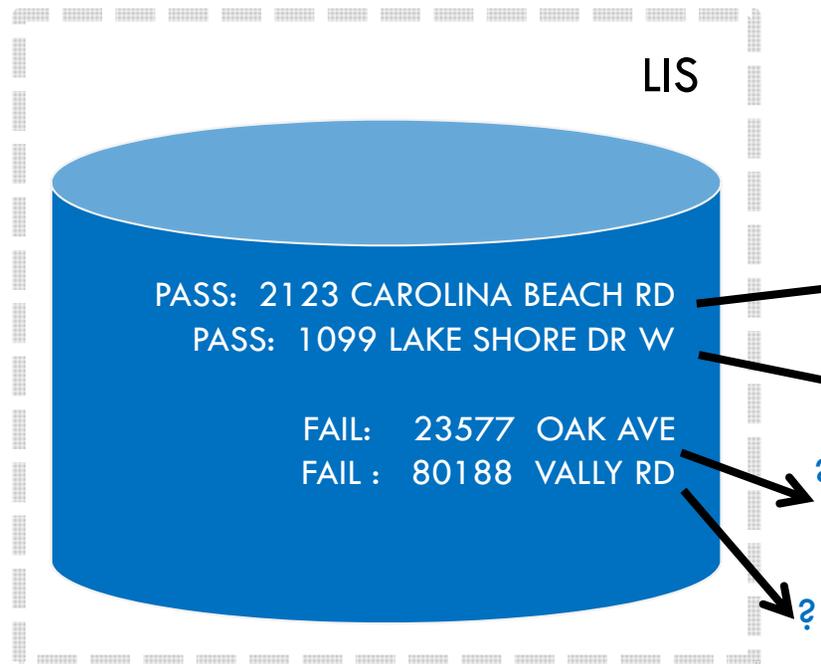
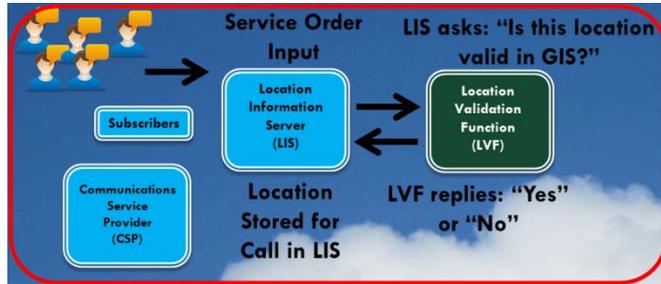
- **ECRF/ESRP geospatial call routing**
  - **Emergency Call Routing Function (ECRF)**
- **LVF/LIS authoritative location validation**
  - **Location Validation Function (LVF)**
- **GIS data creation to support ECRF/LVF, and associated GIS management tools**
  - **GIS Data Sourcing, Management, Provisioning & Spatial Information Function (SIF)**
- **Publication of Authoritative NG9-1-1 Routing Data for state and regional levels**
  - **GIS Data Sourcing, Management, Provisioning & Spatial Information Function (SIF)**



# Location Validation Today



# NG9-1-1 Location Validation



# E9-1-1 Call Routing



Subscriber  
Calling 9-1-1

3208452738



Find ANI  
in SRDB

3208452738 = PSAP A  
3202400040 = PSAP A  
2622423577 = PSAP B  
4246280188 = PSAP C

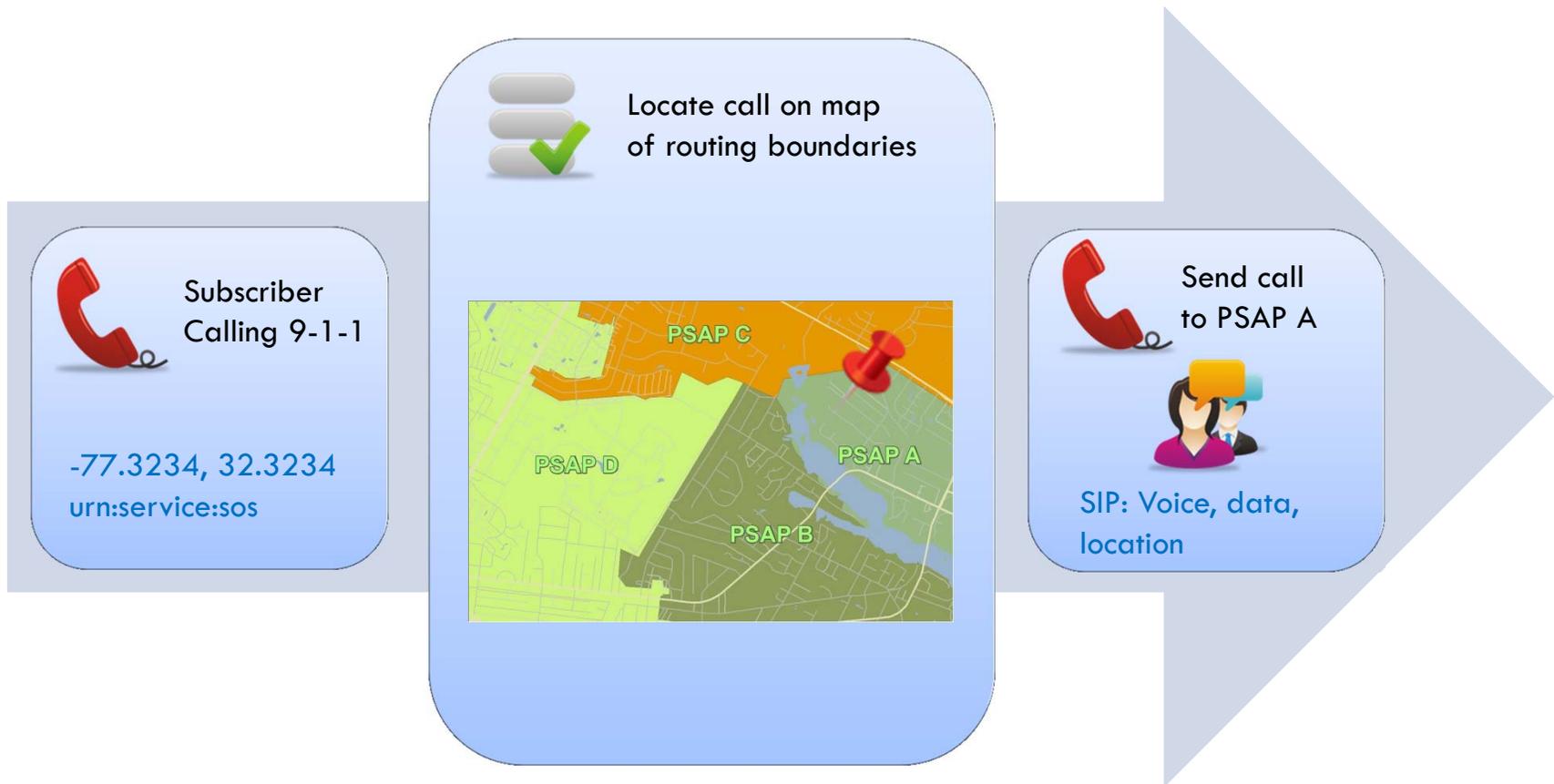


Switch call  
to PSAP A



Voice, ANI

# NG9-1-1 Call Routing





Subscribers

Location Information Server (LIS)

Location Validation Function (LVF)

Spatial Information Function (SIF)

Geographic Information System (GIS)

Communications Service Provider (CSP)

Master GIS Data Provisioning

Emergency Call Routing Function (ECRF)

Policy Routing Function (PRF)

PSAP

CTI

Mapping

Border Control Function (BCF)

PSAP

CTI

Mapping

Emergency Services Routing Proxy (ESRP)

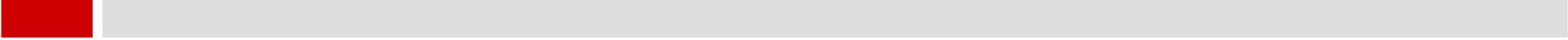
PSAP

CTI

Mapping

# Where is GIS needed?

# NG9-1-1 GIS Standards Development

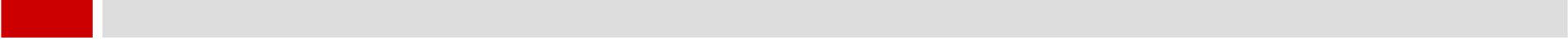


- Standards will define a common data model and set minimum accuracy benchmarks
- Develop by following NG9-1-1 guidelines established by NENA and APCO
- Web sessions with Iowa HSEMD working group to review and adjust draft standards

# NG9-1-1 GIS Standards Development

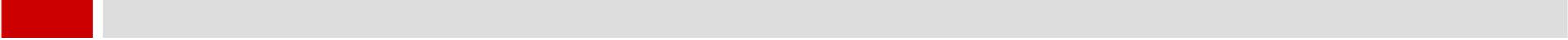
- GIS Layer Definition – Required / Recommended / Optional
  - Road centerlines
  - Site/structure address points
  - Emergency responder boundaries (PSAP, Fire, Law & Medical)
  - Authoritative boundaries (county and municipality)
  - Wireless Phase I sector layer

# NG9-1-1 GIS Standards Development



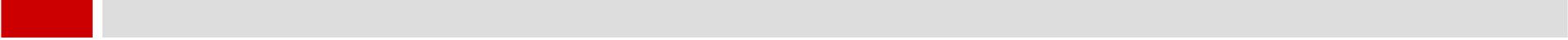
- GIS Synchronization and Accuracy Standards Development May Include:
  - Road name standardization
  - Compliance with NENA standards
  - Validity of attribute information
  - Minimum synchronization levels between GIS map data, MSAG and 9-1-1 database

# NG9-1-1 GIS Standards Development



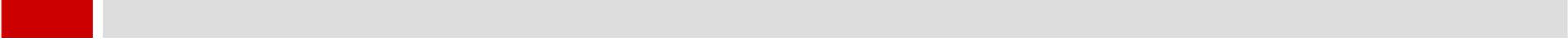
- GIS Standard Documentation and Presentation
  - Collaboration between Iowa Project team, local stakeholders and GeoComm
  - Authoritative document
  - Presentation to Iowa project team
  - Standards rollout - webinars

# GIS Data Gathering and Assessment



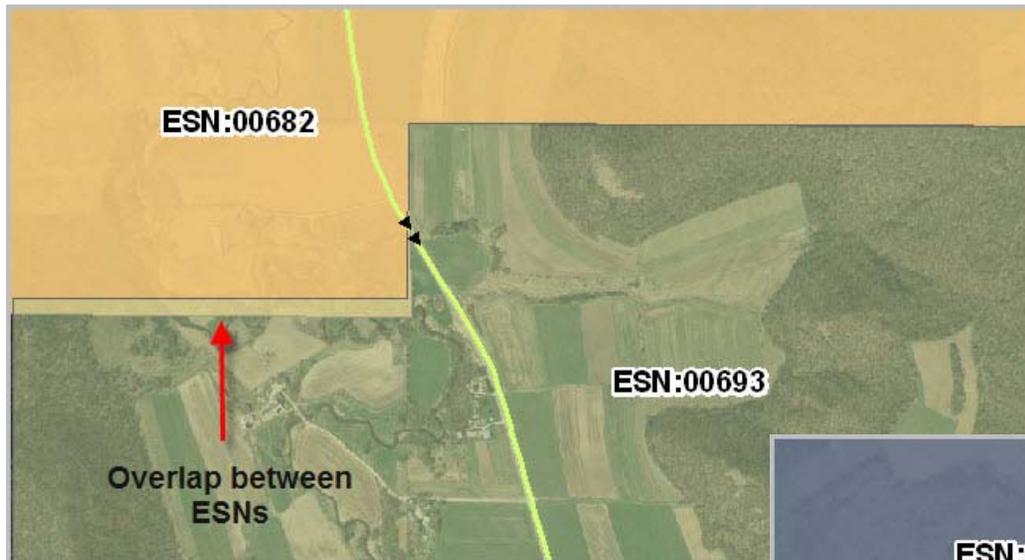
- Request for each county to provide GIS data layers to GeoComm for review
- Phased approach – by regions
- Follow-up plan for data collection
  - ▣ Email, phone calls, assistance from the Iowa project team
- Each county will receive individual assessment as well as an optional follow-up conference call to review the results

# What Will GeoComm be Assessing?



- ▣ Inventory available GIS Data
- ▣ Identify presence/absence of  
Required/Recommended/Optional layers
- ▣ Compare schema to developed standards
- ▣ Identify overlaps/gaps in polygon layers
- ▣ Analyze GIS Data and its synchronization to MSAG and ALI

# Overlaps/Gaps Service Area Boundaries



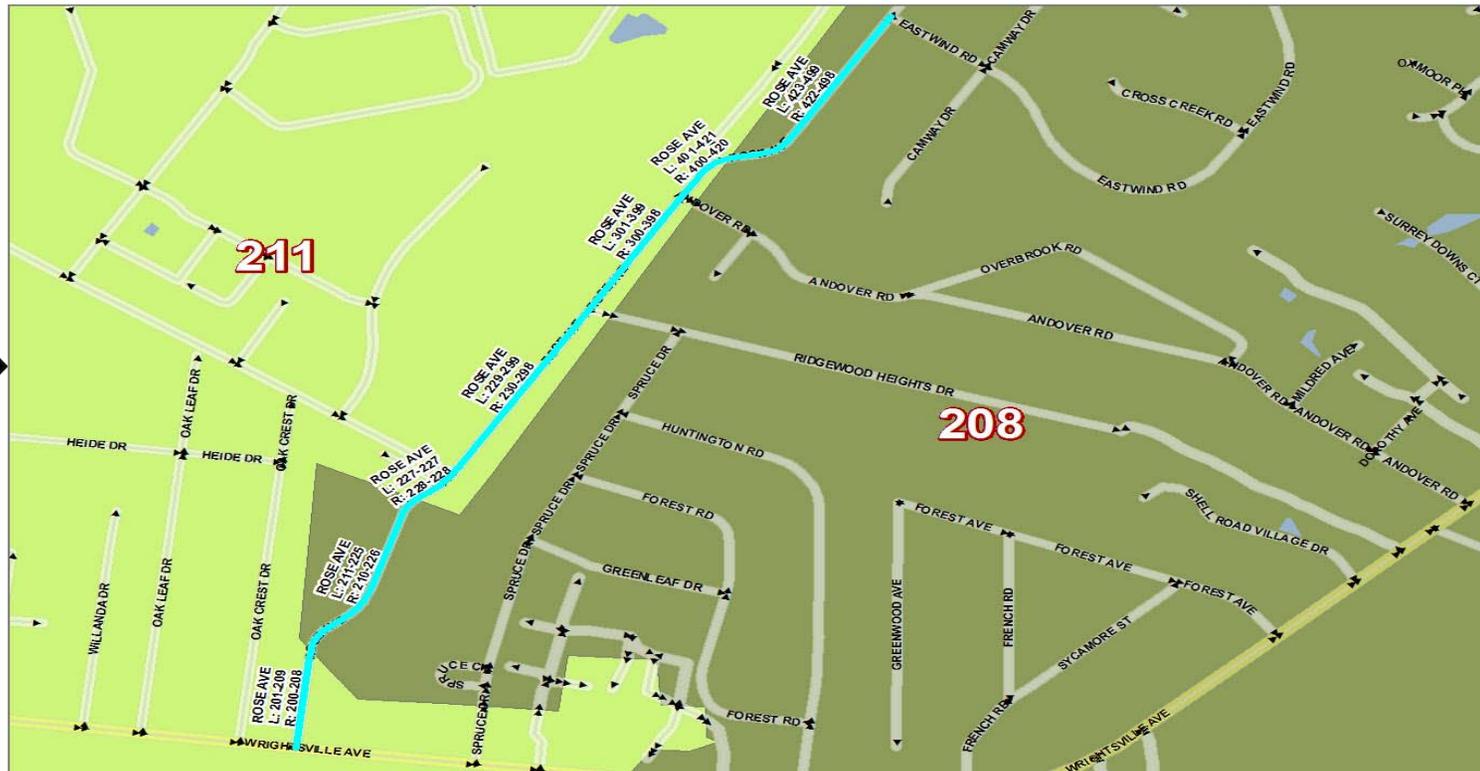
# Centerline Accuracy



- ALI/MSAG synchronization with GIS centerline data
- What is the current match rate
- NG9-1-1: Centerline absorbs MSAG

# NG9-1-1: Centerline absorbs MSAG

PRD	STN	STS	POD	LOR	HIR	MCN	PCN	STA	OEN	ESN	PSI	COI	FULLST	MSG
	ROSE	AVE			200	209 WILMINGTON	WILMINGTON	NC	B	211	5555		ROSE AVE	
	ROSE	AVE			210	226 SEAGATE	SEAGATE	NC	B	208	4444		ROSE AVE	
	ROSE	AVE			227	421 WILMINGTON	WILMINGTON	NC	B	211	5555		ROSE AVE	
	ROSE	AVE			422	599 SEAGATE	SEAGATE	NC	B	208	4444		ROSE AVE	

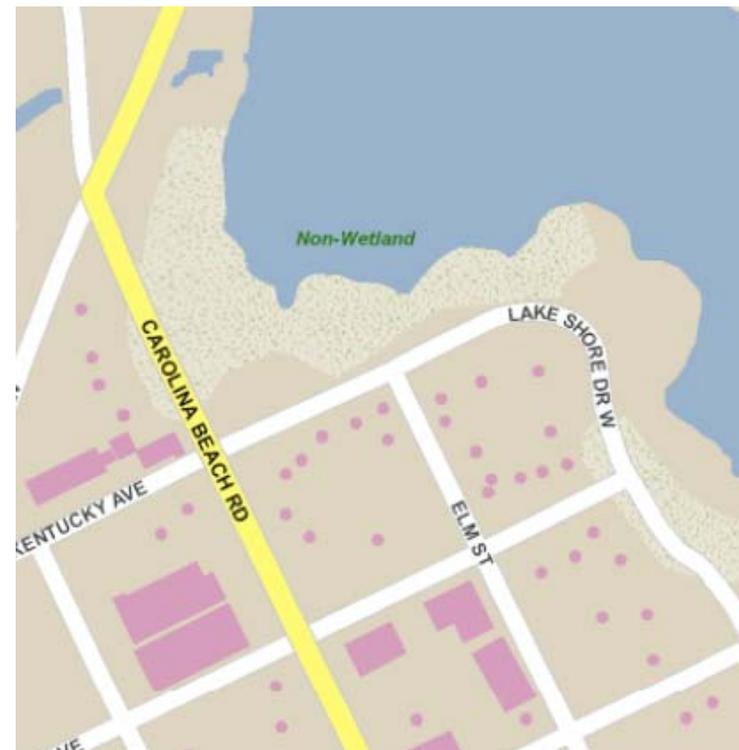


	LEFTFROM	LEFTTO	RIGHTFROM	RIGHTTO	RDCLASS	ONEWAY	SPEED	FULLSTREET	VOIPENL	VOIPENR	CITYL	CITYR	ROUTING	ENL	ENR
	201	209	200	208	LOCAL	2	1	ROSE AVE	1211	1211	WILMINGTON	WILMINGTON	YES	211	211
	211	225	210	226	LOCAL	2	1	ROSE AVE	0	0	SEAGATE	SEAGATE	YES	208	208
	227	227	228	228	LOCAL	2	1	ROSE AVE	0	0	WILMINGTON	WILMINGTON	YES	211	211
	229	299	230	298	LOCAL	2	1	ROSE AVE	1211	1211	WILMINGTON	WILMINGTON	YES	211	211
	301	399	300	398	LOCAL	2	1	ROSE AVE	1211	1211	WILMINGTON	WILMINGTON	YES	211	211
	401	421	400	420	LOCAL	2	1	ROSE AVE	1211	1211	WILMINGTON	WILMINGTON	YES	211	211
	423	499	422	498	LOCAL	2	1	ROSE AVE	0	0	SEAGATE	SEAGATE	YES	208	208

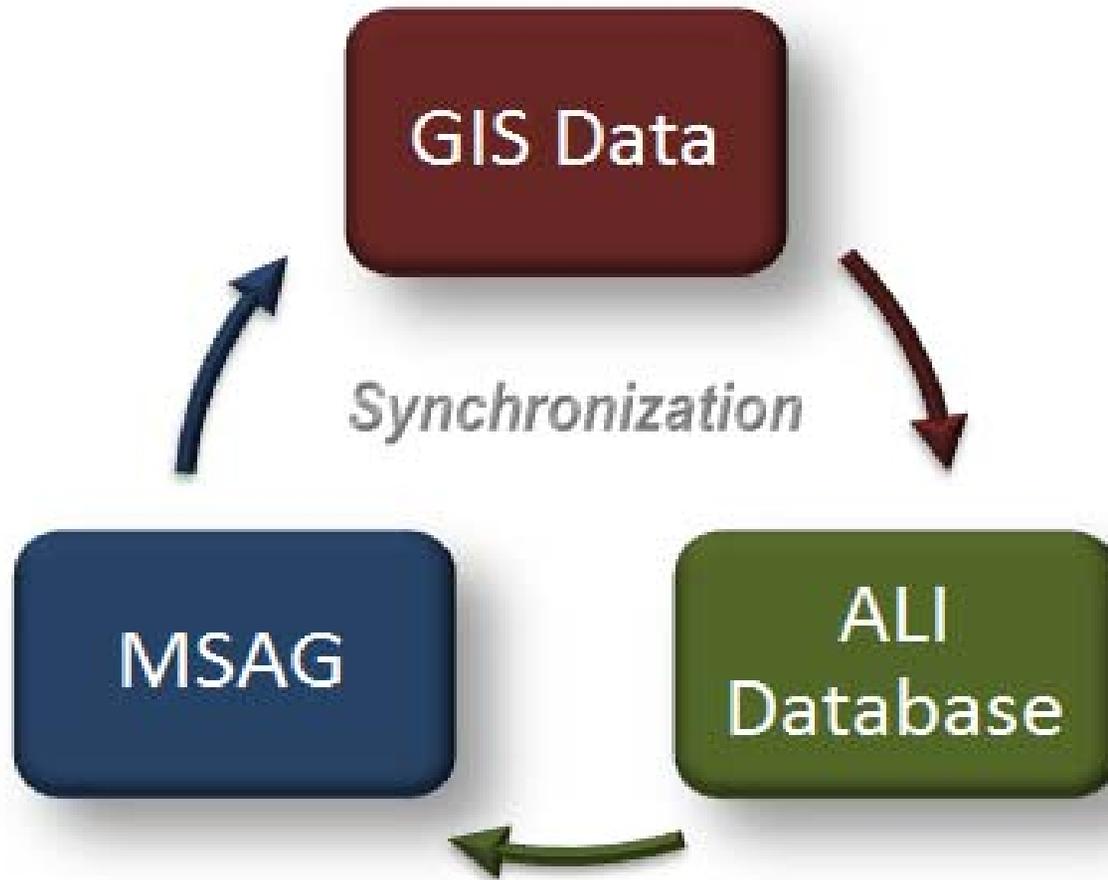


# Address Points

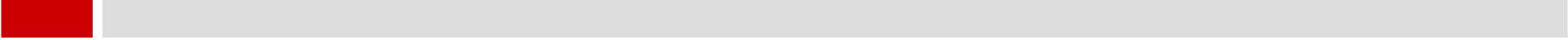
- Are addresses synchronized with MSAG?
- Are addresses synchronized with Centerline?



# Synchronize, Synchronize, Synchronize...

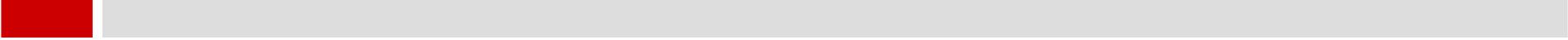


# GIS Data Gathering and Assessment

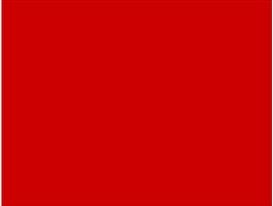


- Each county will receive individual assessment as well as an optional follow-up conference call to review the results
- Final state-wide results reported to State HSEMD

# What's comes next for Iowa?



- State will review final report and assessments
- State will develop a plan for the next phase of project based on the recommendations in final report



# Questions?

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**GeoComm**