

MSGIC MEETING

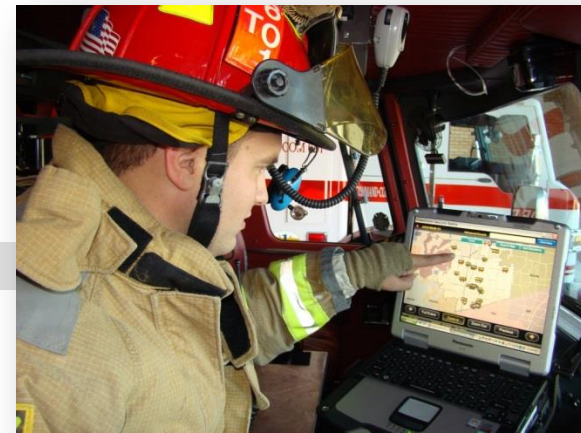
THE ROLE OF GIS IN NEXT GENERATION 9-1-1



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January 15, 2014

GeoComm

Public Safety GIS



GeoComm Highlights

FEMA Integrated Public Alert Warning System (IPAWS)



The importance of Address Point Layer Development



In-Vehicle Mapping and Navigation



Data Management for Public Safety GIS



The only Public Safety GIS Esri Platinum Partner



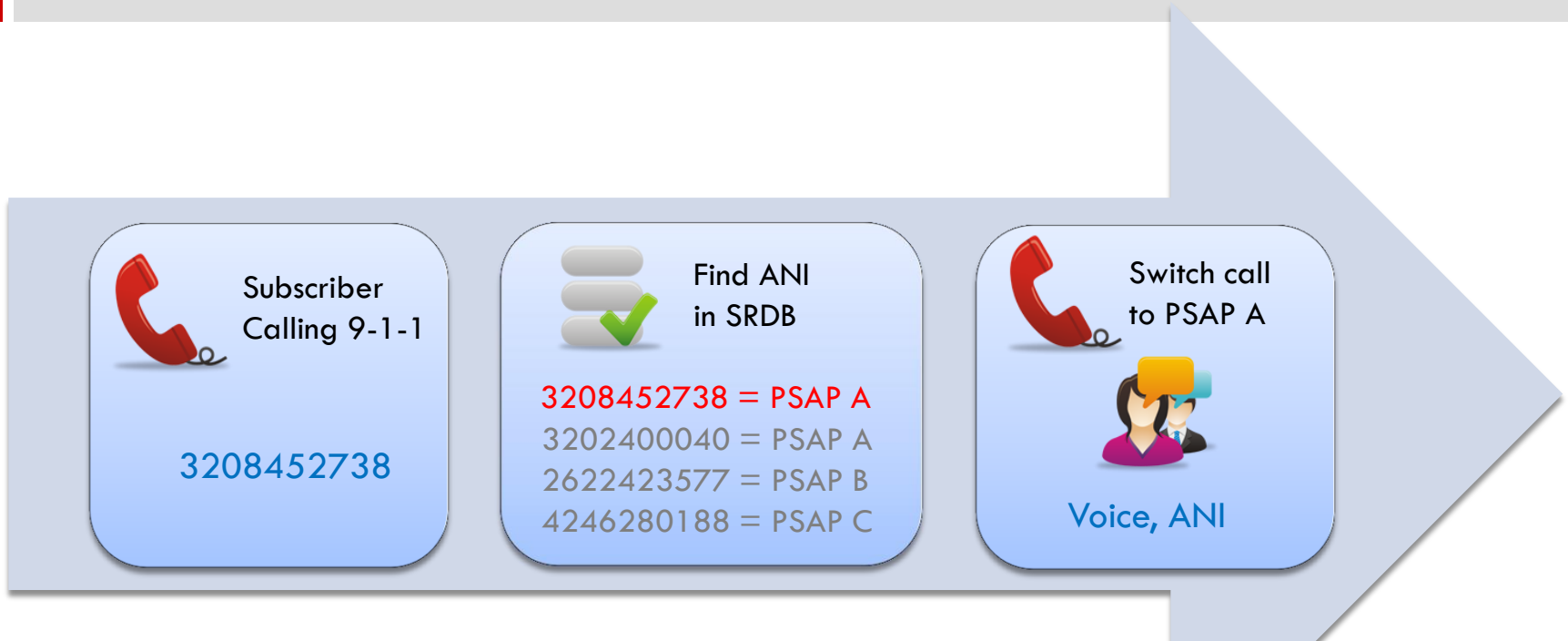
Next Generation 9-1-1 GIS Data Report Card





NEXT GENERATION 9-1-1 OVERVIEW

E9-1-1 Call Routing today (Legacy 9-1-1)



ANI = Automatic Number Identifier

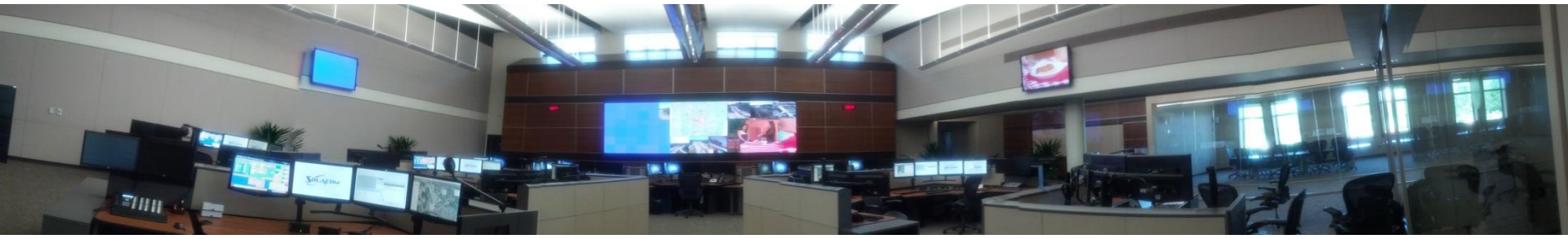
SRDB = Selective Routing Database

PSAP = Public Safety Answering Point

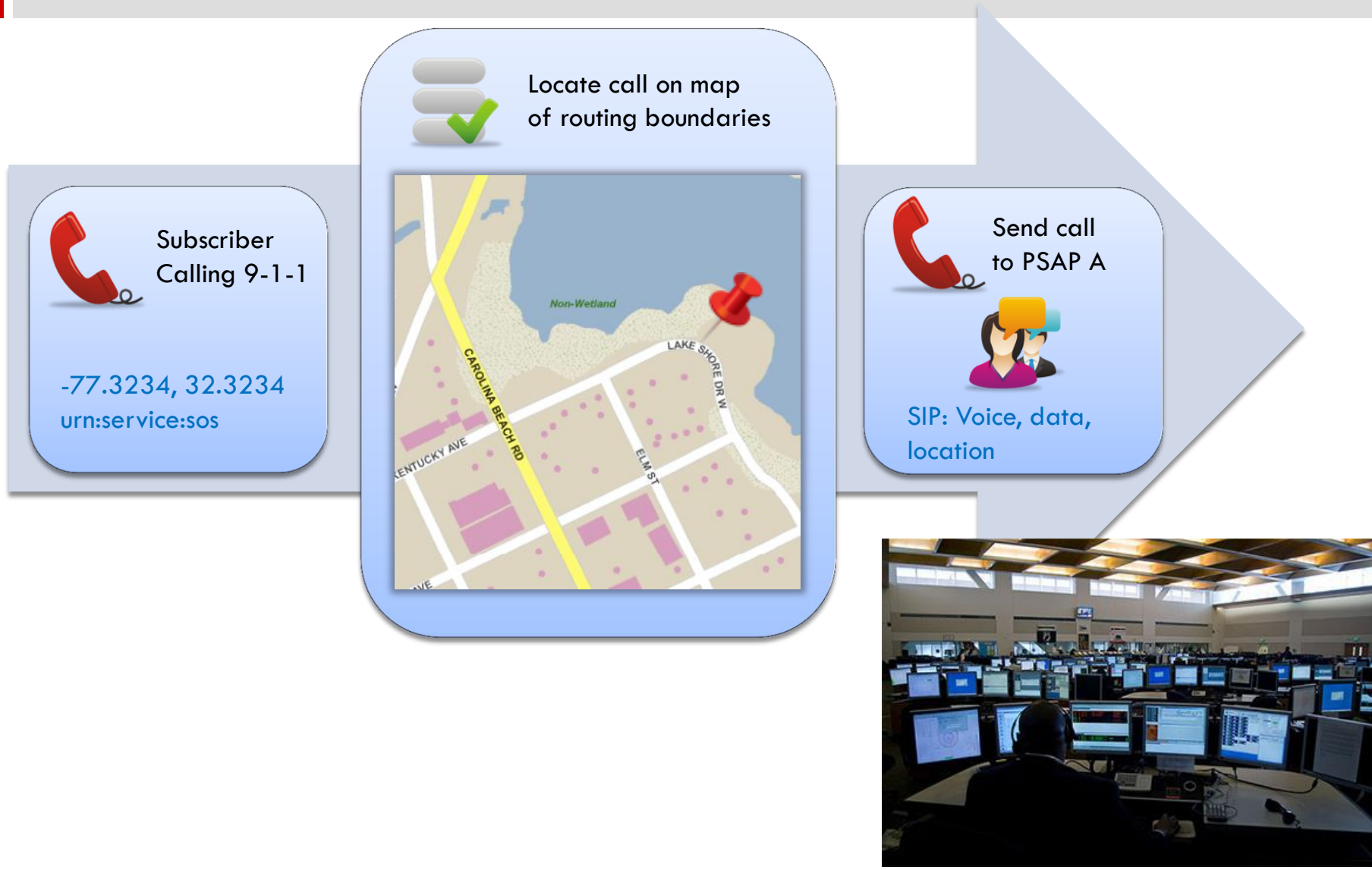


What is NG9-1-1?

Next Generation 9-1-1 refers to an initiative aimed at updating the 9-1-1 service infrastructure in North America to improve public emergency communications services in a wireless mobile society.



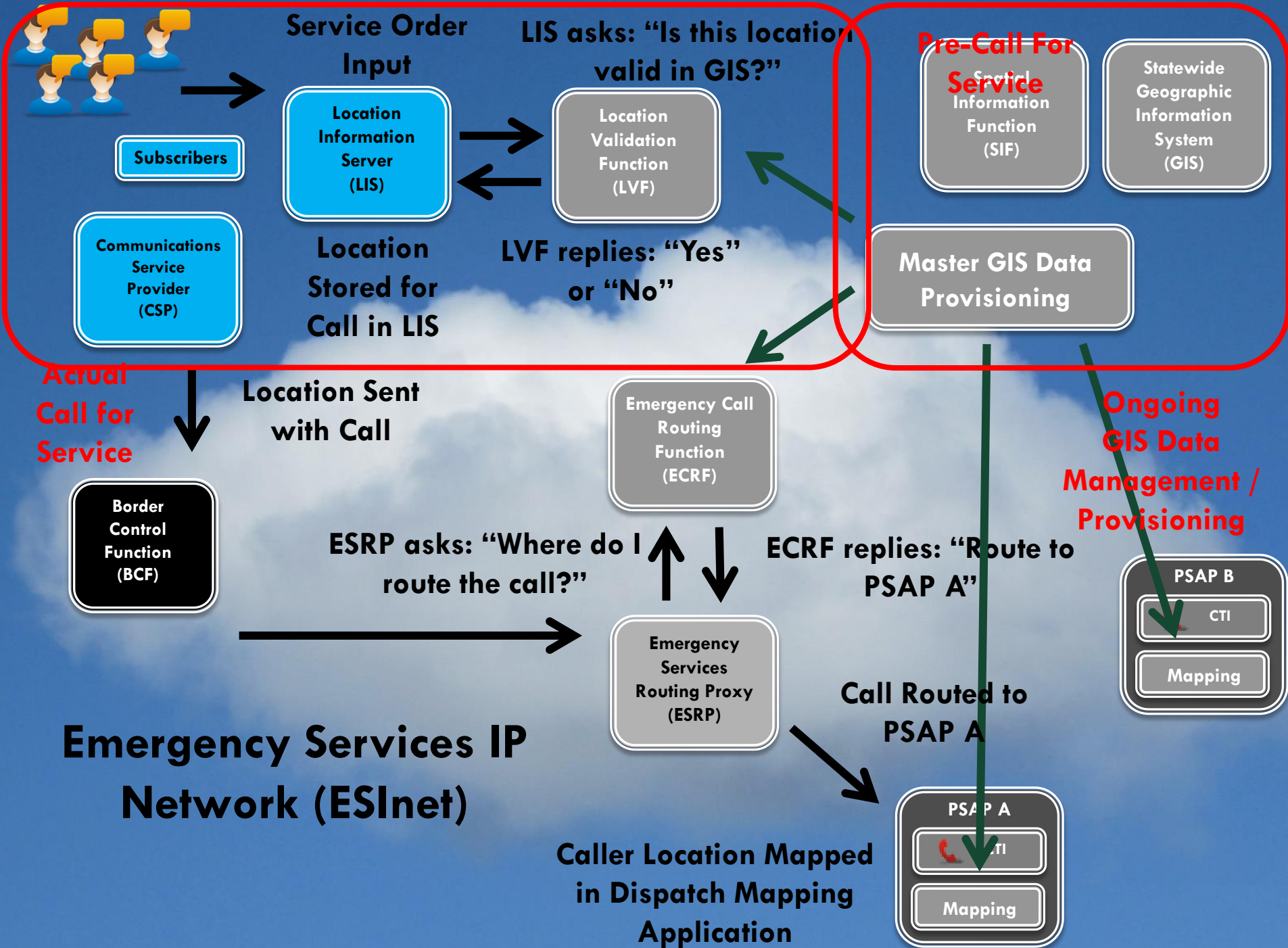
NG9-1-1 Call Routing



- ESInet (Emergency Service IP network)
- ECRF/ESRP geospatial call routing
- LVF/LIS authoritative location validation
- GIS data created to support ECRF/LVF, and associated GIS management tools
- Publication of Authoritative NG9-1-1 Routing Data for state and regional levels
- Support for legacy originating services via gateways (e.g., access to traditional ALI)
- The ability to control call routing based upon a policy routing function (PRF)
- Additional data acquisition after call delivery to facilitate call processing by TCs
- Support for transfer of calls with accumulated call-taker notes and added data
- Ability to interconnect with other NG9-1-1 systems and to interwork with E9-1-1
- Support for system monitoring / logging / discrepancy reporting

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)





REQUIRED GIS DATA

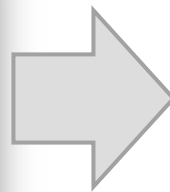
Required GIS Data

- Service Area Boundaries
 - PSAP (initial call routing)
 - Law, Fire, Medical (selective call transfers)
 - Other: Poison Control, etc. (other possible transfers)
- Data for Validating and Routing Civic Addresses (*House Number, Street Name, Community*)
 - Structure Points
 - Parcels or Sub-Parcels (building footprints)
 - Ranged Road Centerlines

GIS now replaces the MSAG

- ❑ Necessary GIS data layers
 - ❑ PSAP Service Area Boundary Layer
 - ❑ Address Location Data

	A	B	C	D	E	F	G	H	I	J	K
1	Dir	Street	Community	St	Low	High	O/E	ESN	Exch	Entity	MSAG Sys
2		TAYLOR-PAGE AVE	CLARINDA	IA	1500	1798	E	4970		046	CASSIA
3		TAYLOR-PAGE AVE	NEW MARKET	IA	2050	2138	E	4970		046	CASSIA
4		TAYLOR-PAGE AVE	NEW MARKET	IA	2139	2199		4970		046	CASSIA
5		TAYLOR-PAGE AVE	NEW MARKET	IA	2700	2798	E	4970		046	CASSIA
6		DENVER AVE	VILLISCA	IA	1200	1249		4970		046	CASSIA
7		DENVER AVE	VILLISCA	IA	1400	1425		4970		046	CASSIA
8	E	10TH ST	ATLANTIC	IA	1	1599		4935		046	CASSIA
9	W	10TH ST	ATLANTIC	IA		1201		4935		046	CASSIA
10		110TH ST	MASSENA	IA	1935	1935		4954		046	CASSIA
11		11TH ST	ANITA	IA	500	699		4932		046	CASSIA
12	E	11TH ST	ATLANTIC	IA	1	1299		4935		046	CASSIA
13	W	11TH ST	ATLANTIC	IA	1	399		4935		046	CASSIA
14		120TH ST	ANITA	IA	1036	1036		4964		046	CASSIA
15	E	12TH ST	ATLANTIC	IA	1	1299		4935		046	CASSIA
16	E	13TH ST	ATLANTIC	IA	1	1299		4935		046	CASSIA
17	W	13TH ST	ATLANTIC	IA	200	399		4935		046	CASSIA
18		140TH ST	ADAIR	IA	1133	1133		4964		046	CASSIA



Address Location Data



Points

- Structure point
- Can have unit
- Access point



Line

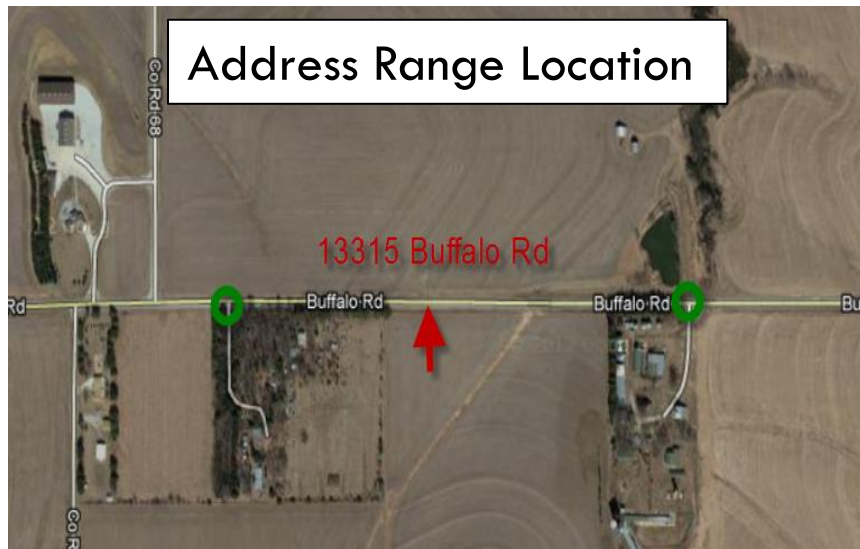
- Streets
- Address ranges



Polygon

- Building footprint

Address Points vs. Address Ranging



Address ranging is not always accurate



NG9-1-1 GIS Services



Subscribers

Location Information Server (LIS)

Location Validation Function (LVF)

Spatial Information Function (SIF)

Statewide Geographic Information System (GIS)

Communications Service Provider (CSP)

Master GIS Data Provisioning

Border Control Function (BCF)

Emergency Call Routing Function (ECRF)

Emergency Services Routing Proxy (ESRP)

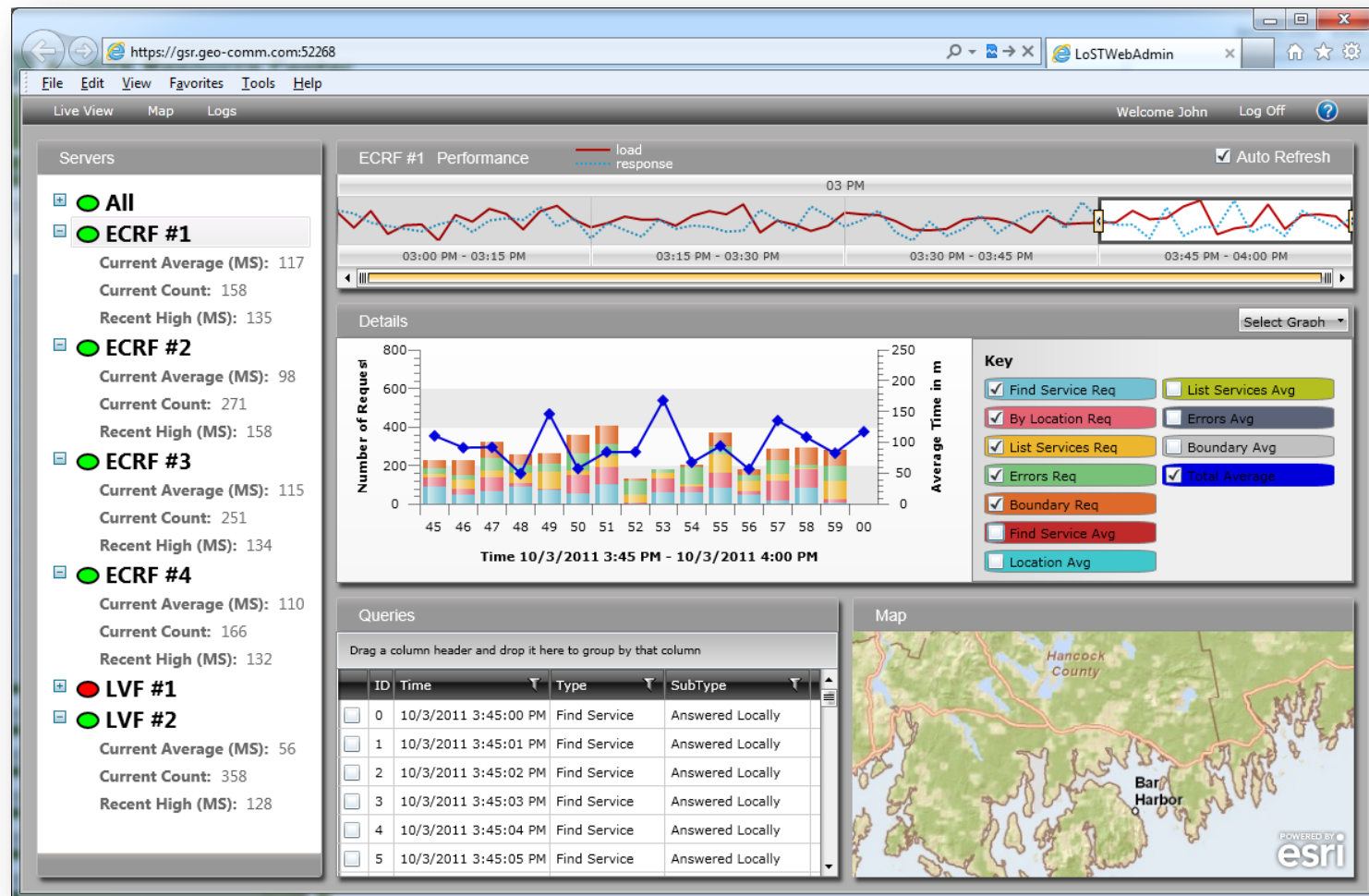
PSAP B
CTI
Mapping

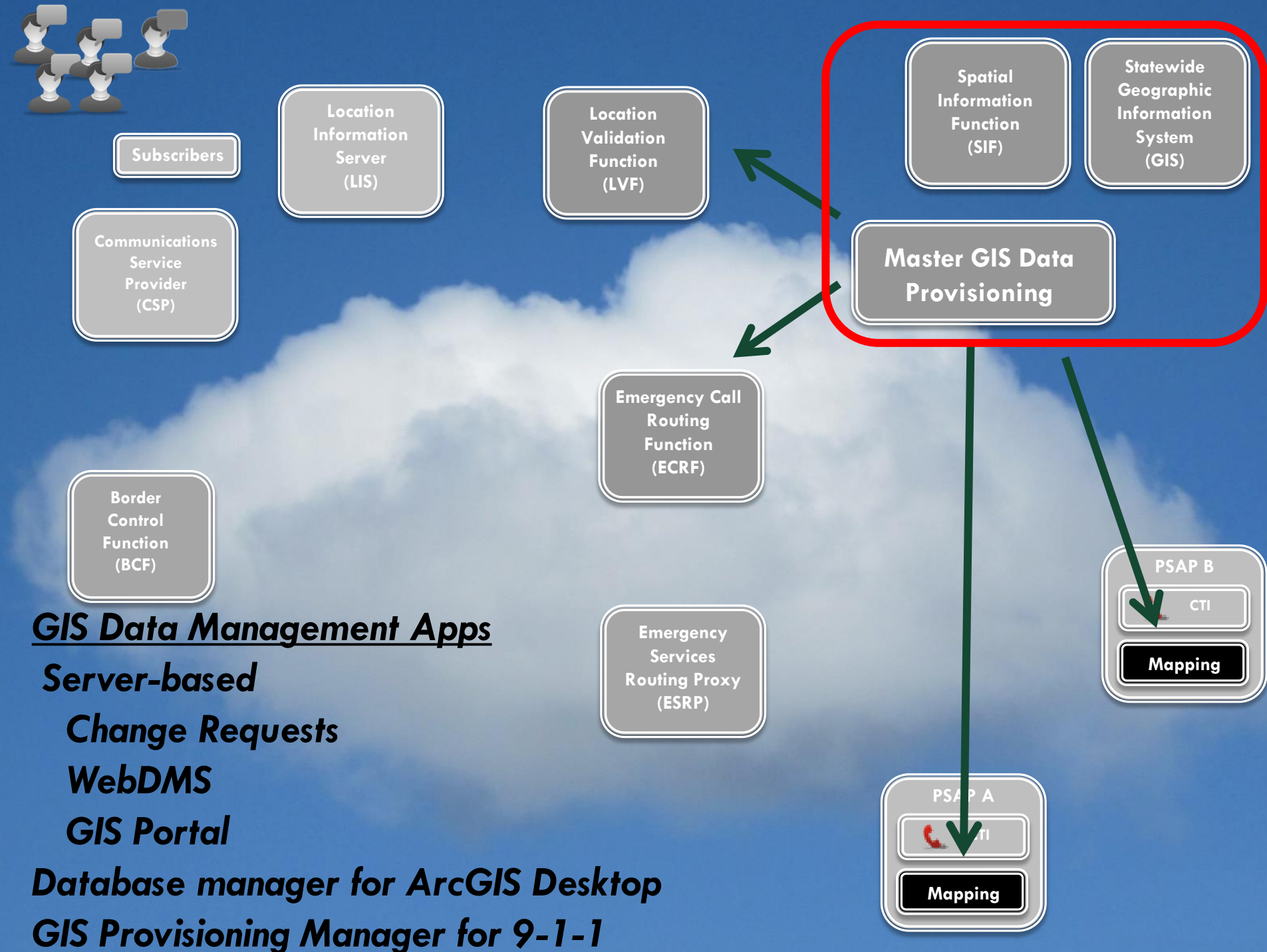
PSAP A
CTI
Mapping

“Spatial Router”
LVF / ECRF



Spatial Router for 9-1-1 networks

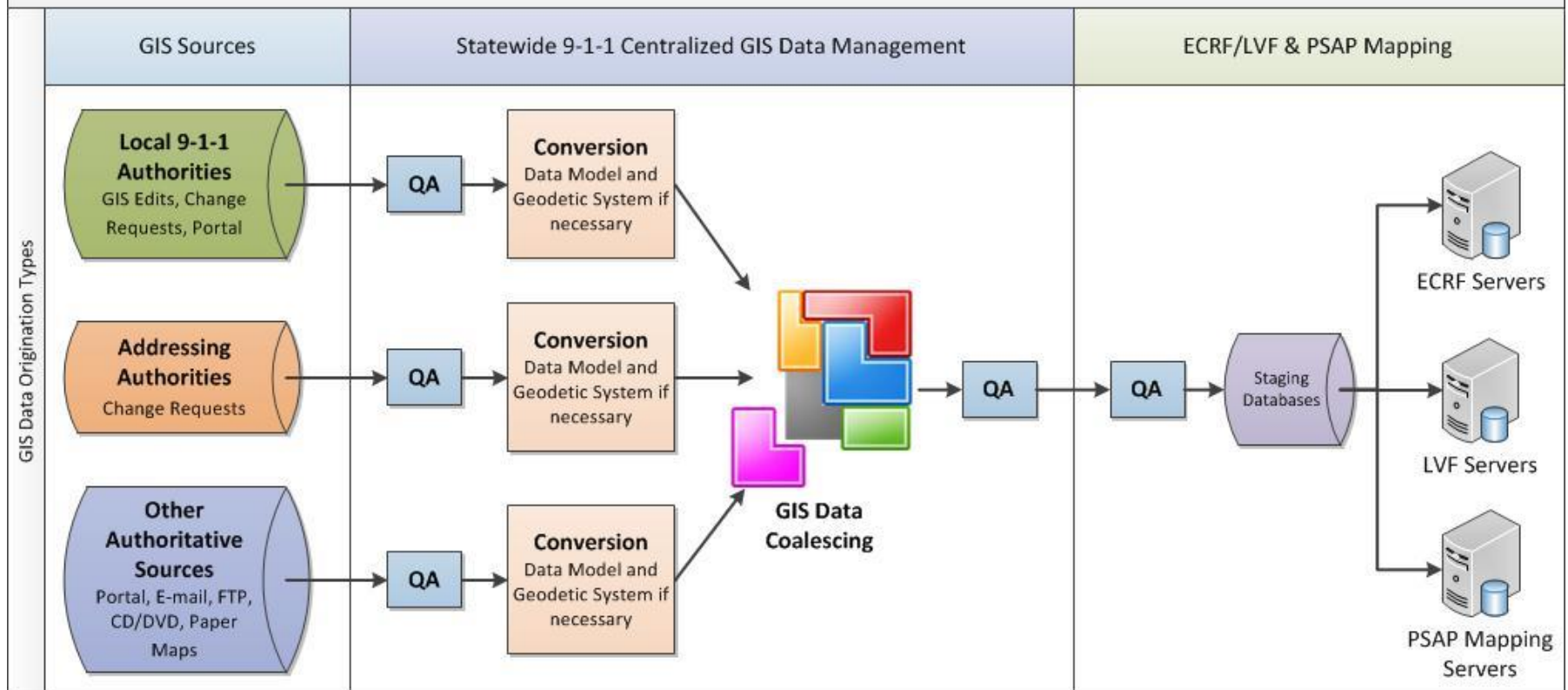




GIS Management Apps

Tools for Data Management

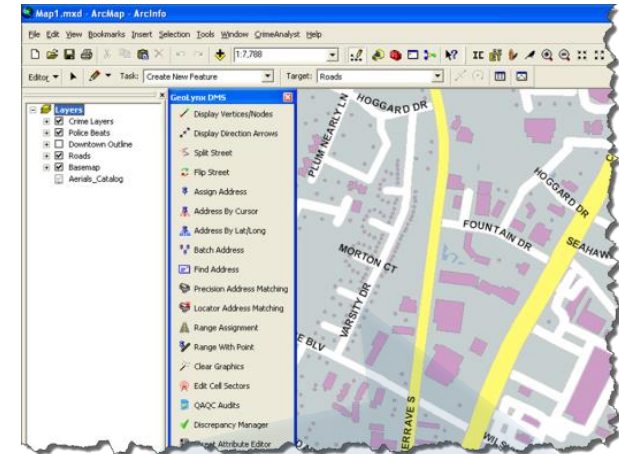
NG9-1-1 GIS Provisioning System Overview



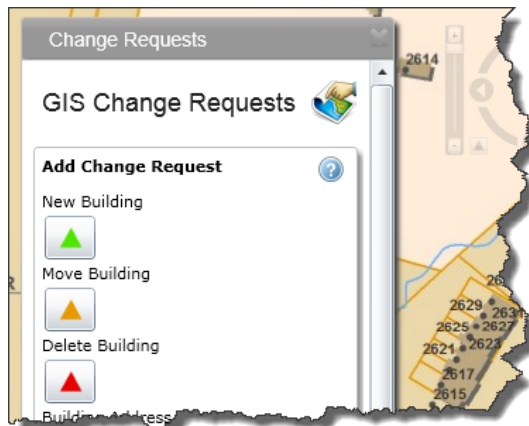
GIS Management Apps

For all levels of contributors Database Manager ArcGIS Desktop

Server-based WebDMS



Server-based
Change Requests



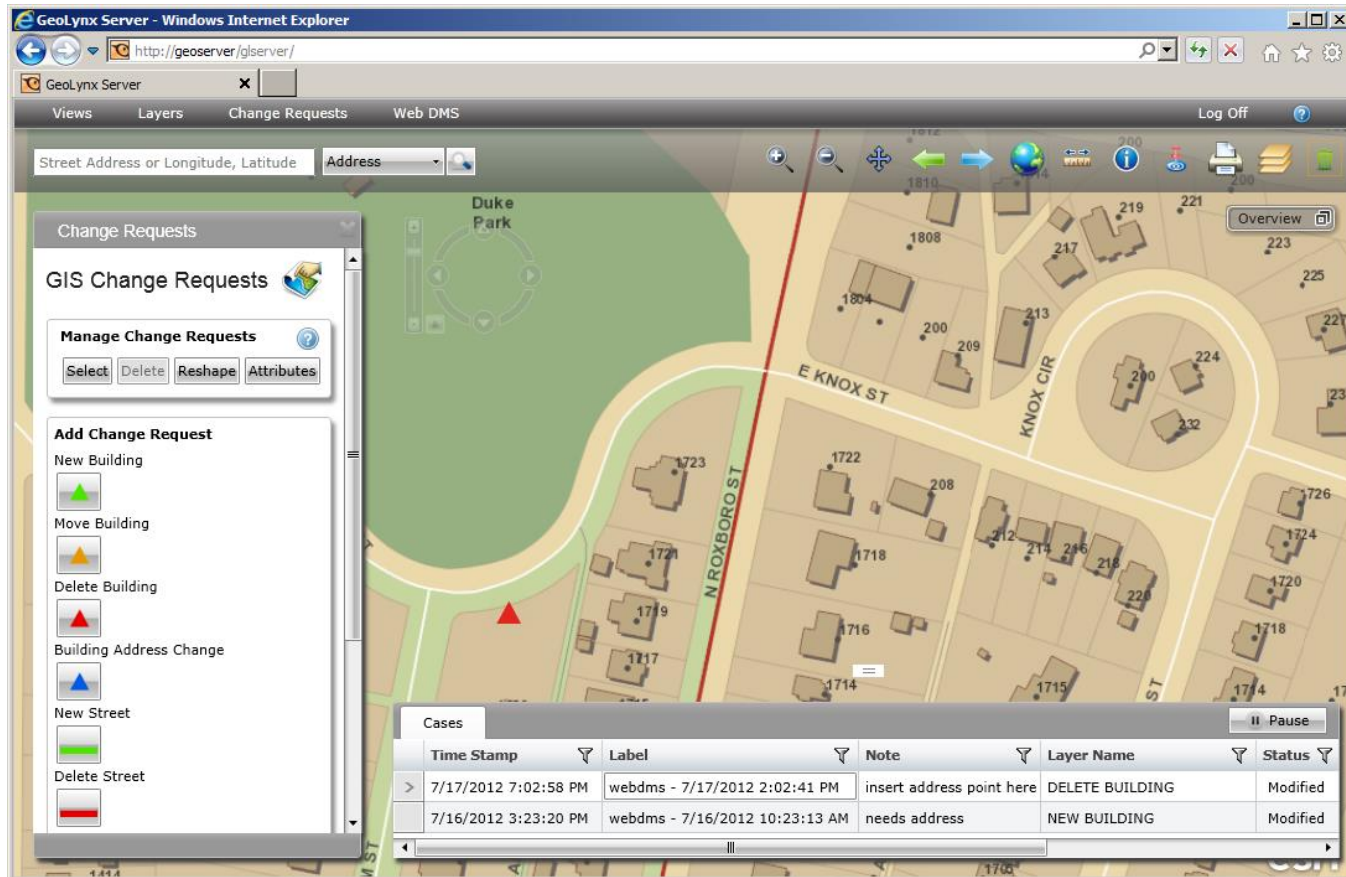
Basic
Editors

Power GIS
Editors &
Managers

Change
Requestors

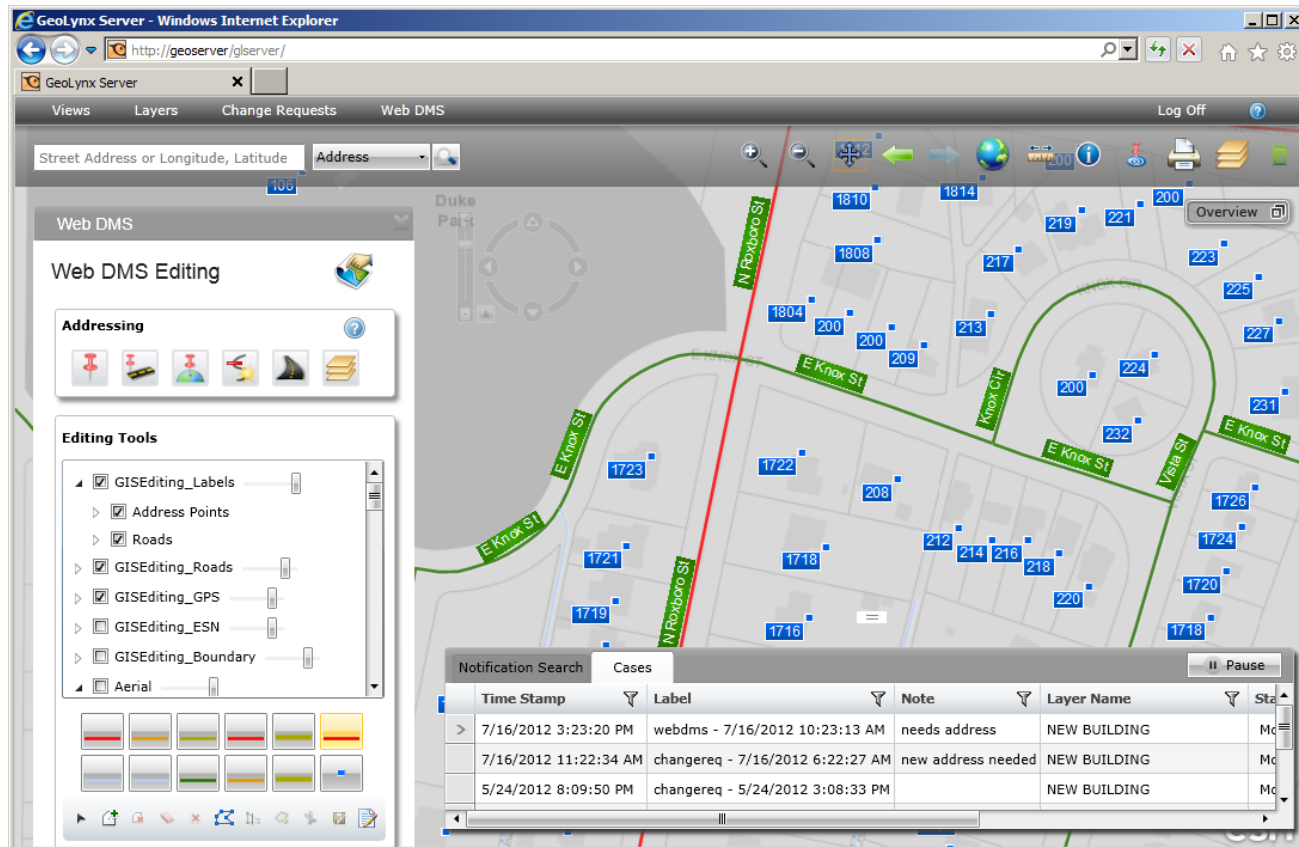
GIS Management Apps

Server-based “Change Requests”



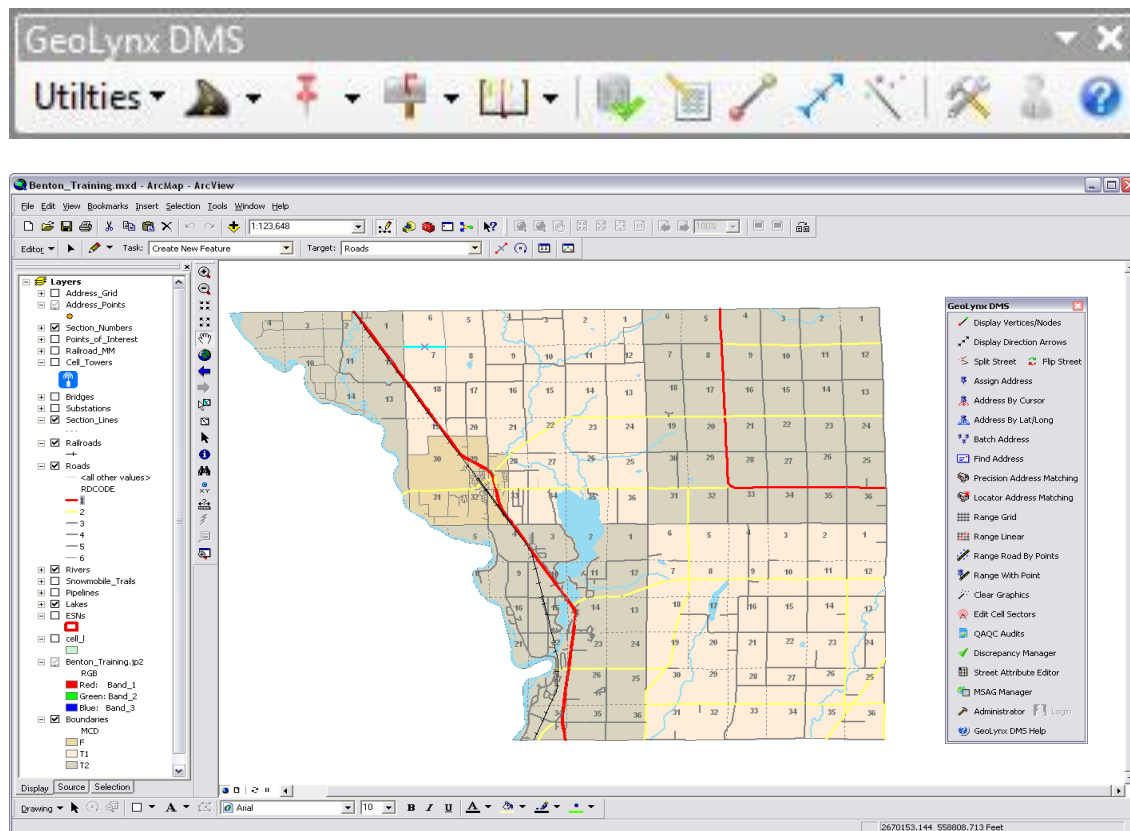
GIS Management Apps

Server-based WebDMS



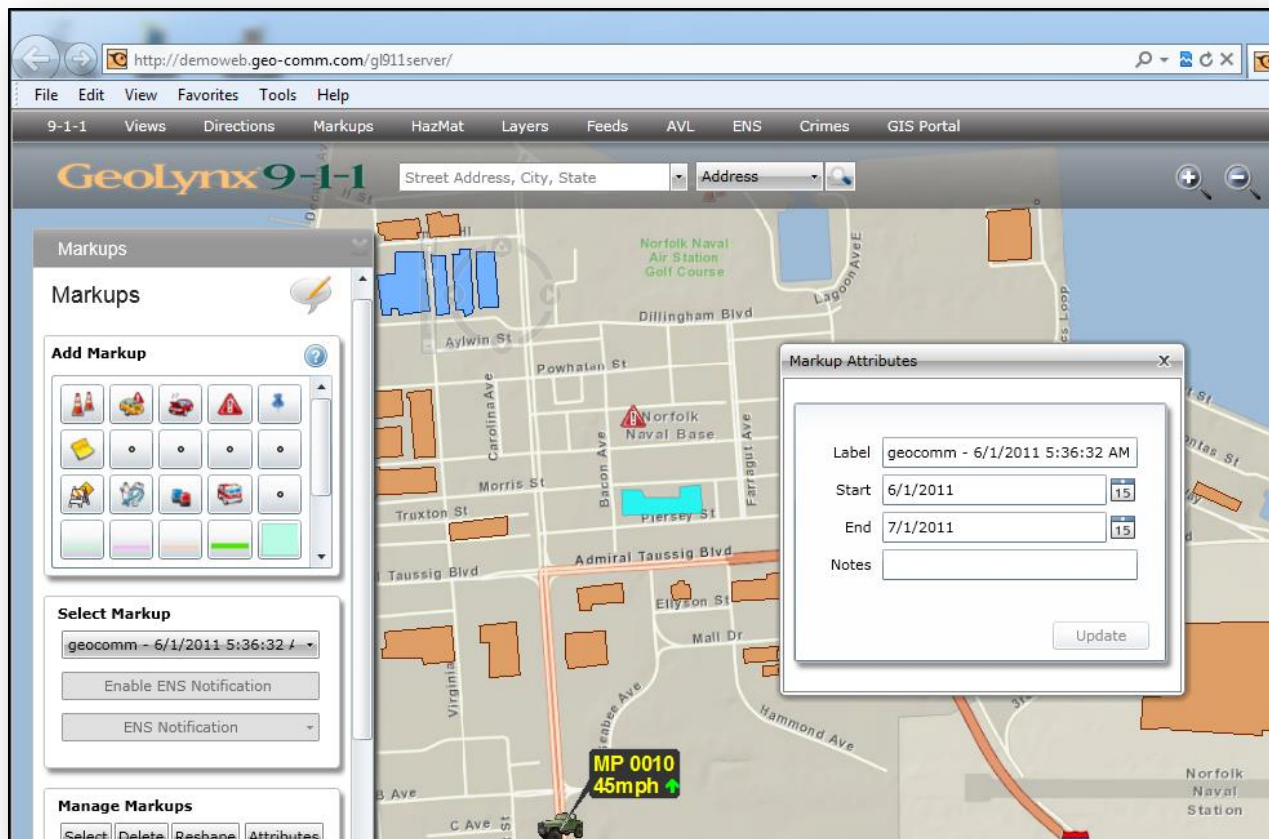
GIS Management Apps

DMS for ArcGIS Desktop



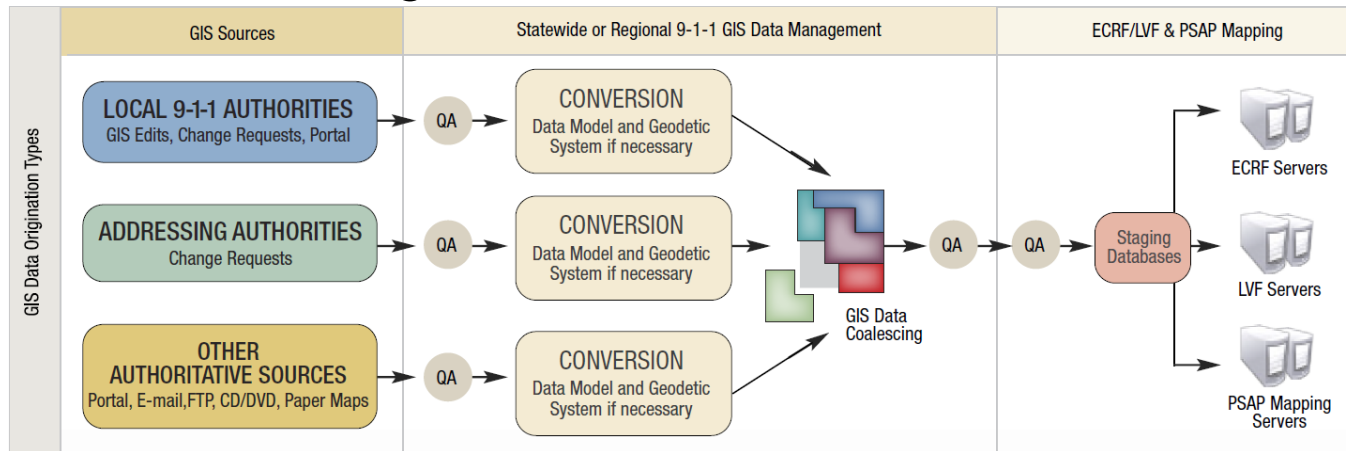
Enterprise Server GIS

GIS Web Editing & Markups

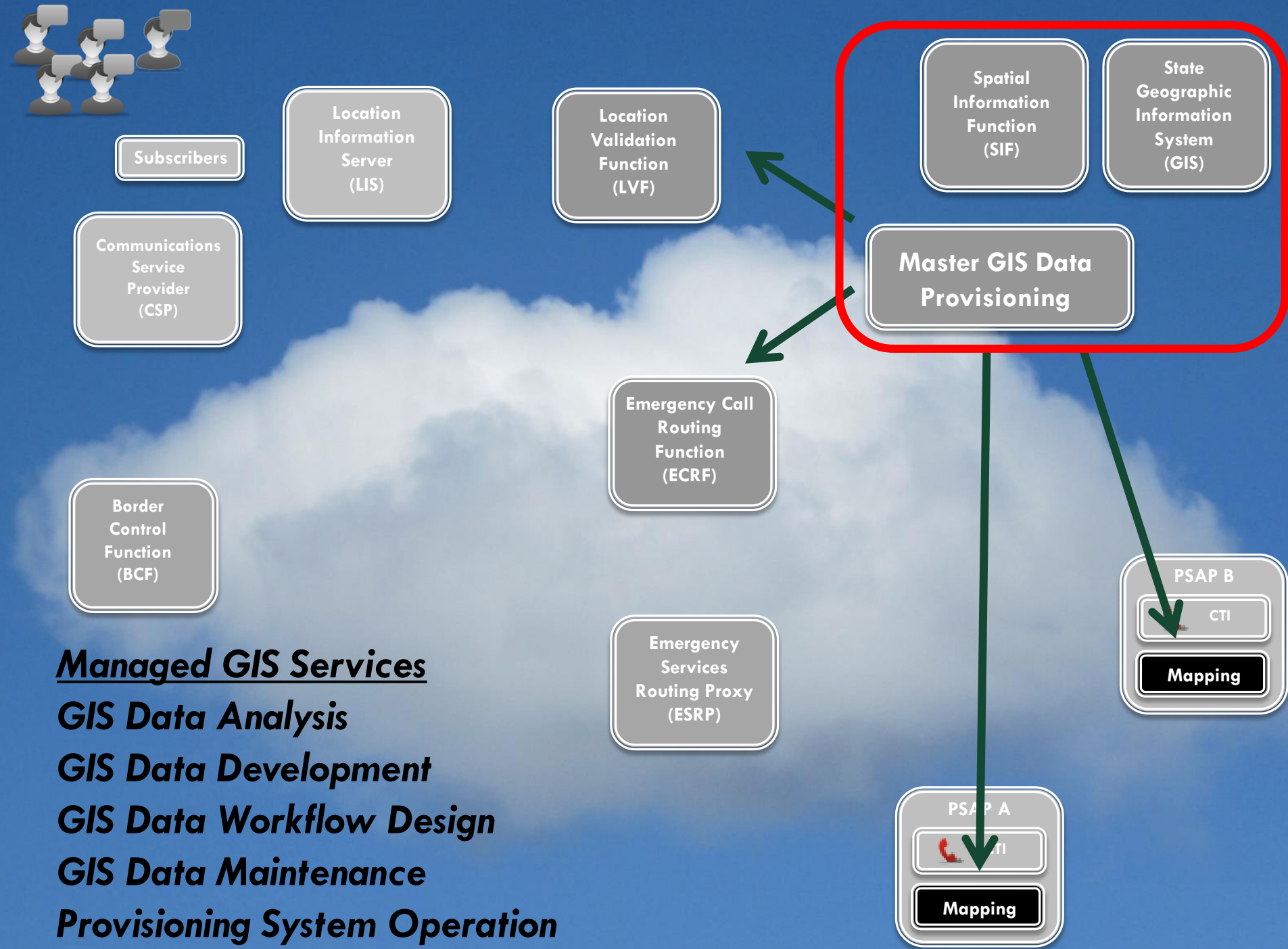


GIS Management Apps

GIS Provisioning



- ❑ Fully automates:
 - ❑ Data model & geodetic conversion
 - ❑ Coalesces into a seamless dataset
 - ❑ Performs QC: attribute, geometry, topology
 - ❑ Provisions data to ECRF/LVF (NextGen 9-1-1 requirements)



Local and State Gov't Considerations

- ❑ Make GIS a priority within your NG9-1-1 strategy
- ❑ Start working on your GIS data today (MSAG/ALI sync) and talk to your county 9-1-1 Director about it!
- ❑ Recognize that localities will be authoritative sources for GIS data modifications
- ❑ Design and implement a “local-up” GIS data maintenance workflow for consistent and predictable updates for cooperation between locals and state
- ❑ Regional collaboration and data sharing with surrounding jurisdictions
- ❑ Implement the ideal combination of GIS editing tools and GIS data management applications that are tailored to the needs of Public Safety



Thank you!

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GeoComm