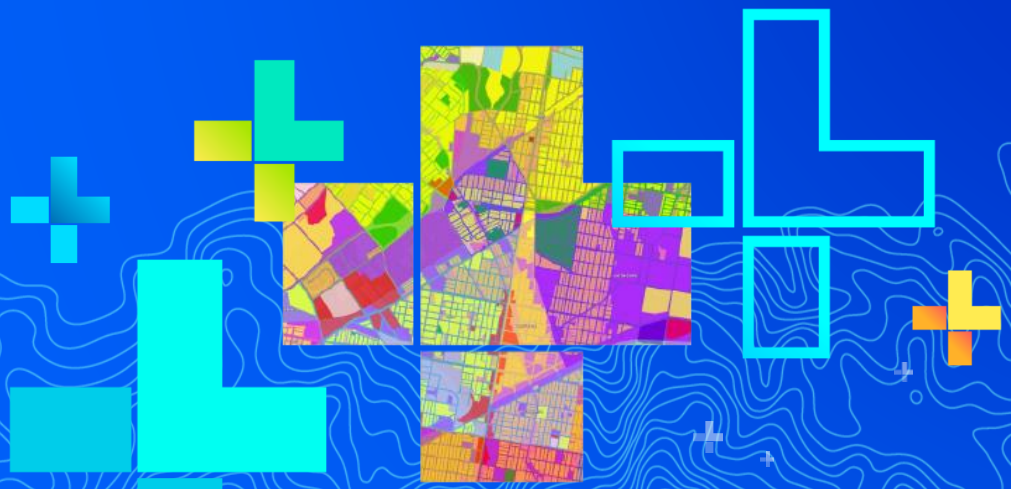
Ideas for Enabling Effective Local, Regional, and State-level NG9-1-1 Maintenance

Your Presenters:

Rodger Mann – NCT9-1-1

Jessica Beierman – GeoComm



9-1-1 GIS Data Goals

Accurate, detailed location information	Emergency vehicle routing	Indoor building information
PSAP map display	Records validation	9-1-1 call routing

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

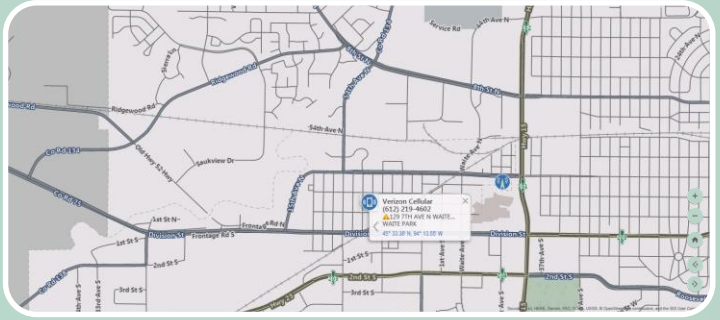
9-1-1 GIS Data Goals

Accurate, detailed location information	Emergency vehicle routing	Indoor building information
PSAP map display	Records validation	9-1-1 call routing

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

9-1-1 Caller Expectations

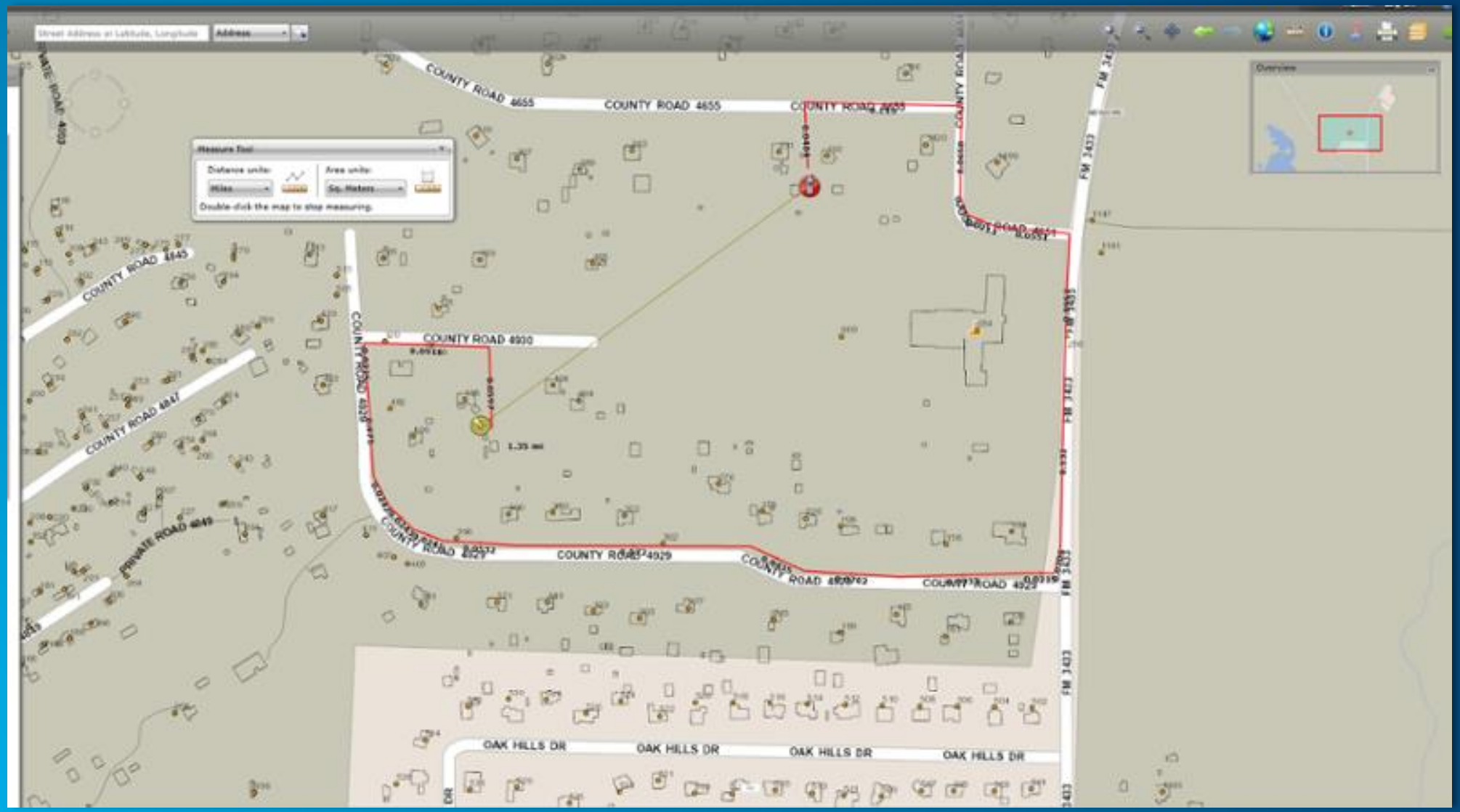
9-1-1 call taker knows exactly where I am



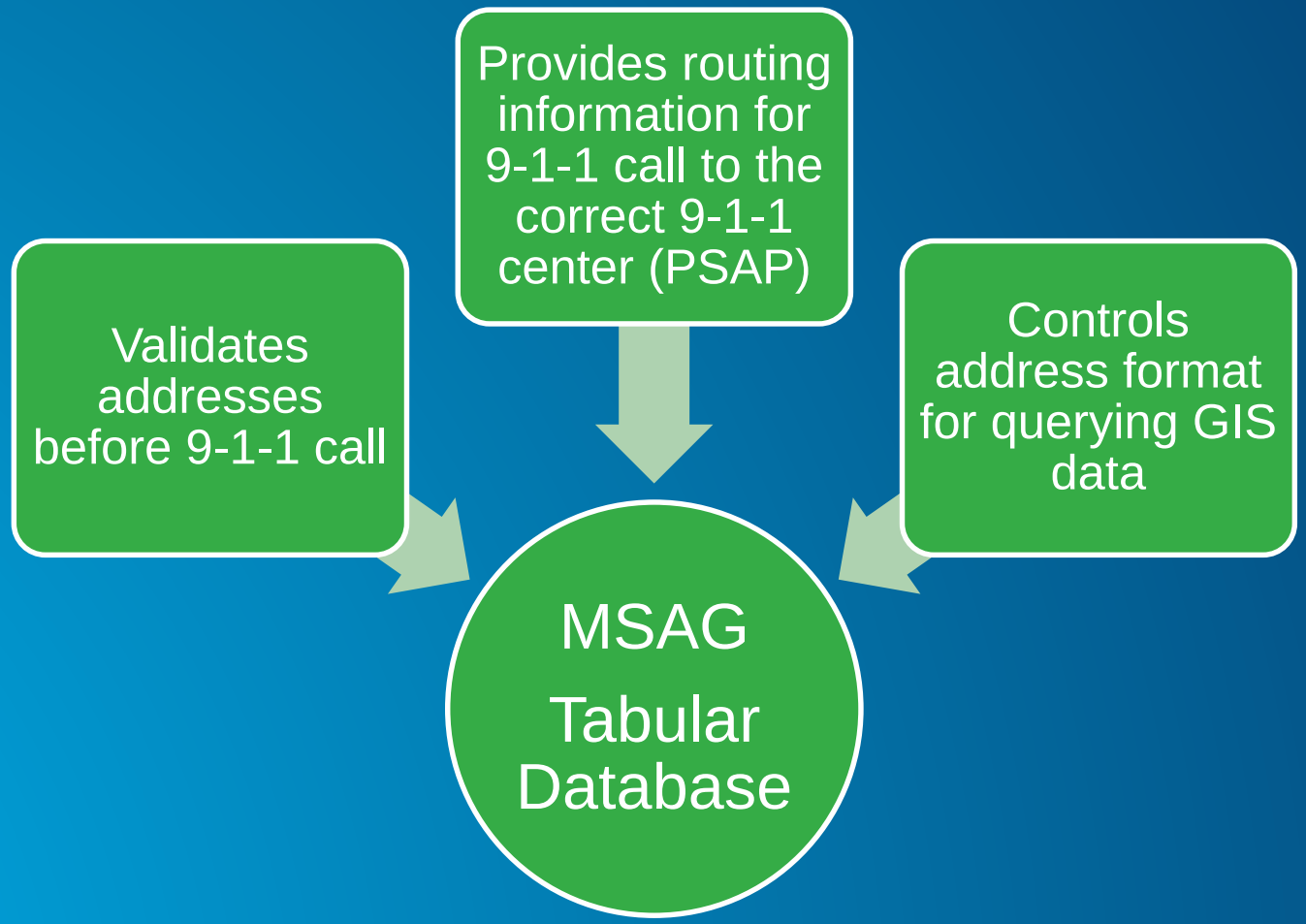
9-1-1 uses consistent and reliable communications systems

Help will arrive quickly

Real-life Success Story



E9-1-1 Critical Database
MSAG (Master Street Address Guide)



Maintained by **Public Safety*** *Housed with Telcos

NG9-1-1 Network Use for GIS Map Data……

E9-1-1

MSAG
used for validation and routing

NG9-1-1

GIS
used for validation and routing

NG9-1-1 Critical Database
GIS Data

Validate addresses before 9-1-1 call

Location Validation Function (LVF)

Routes call to the correct 9-1-1 center (PSAP)

Emergency Call Routing Function (ECRF)

GIS database

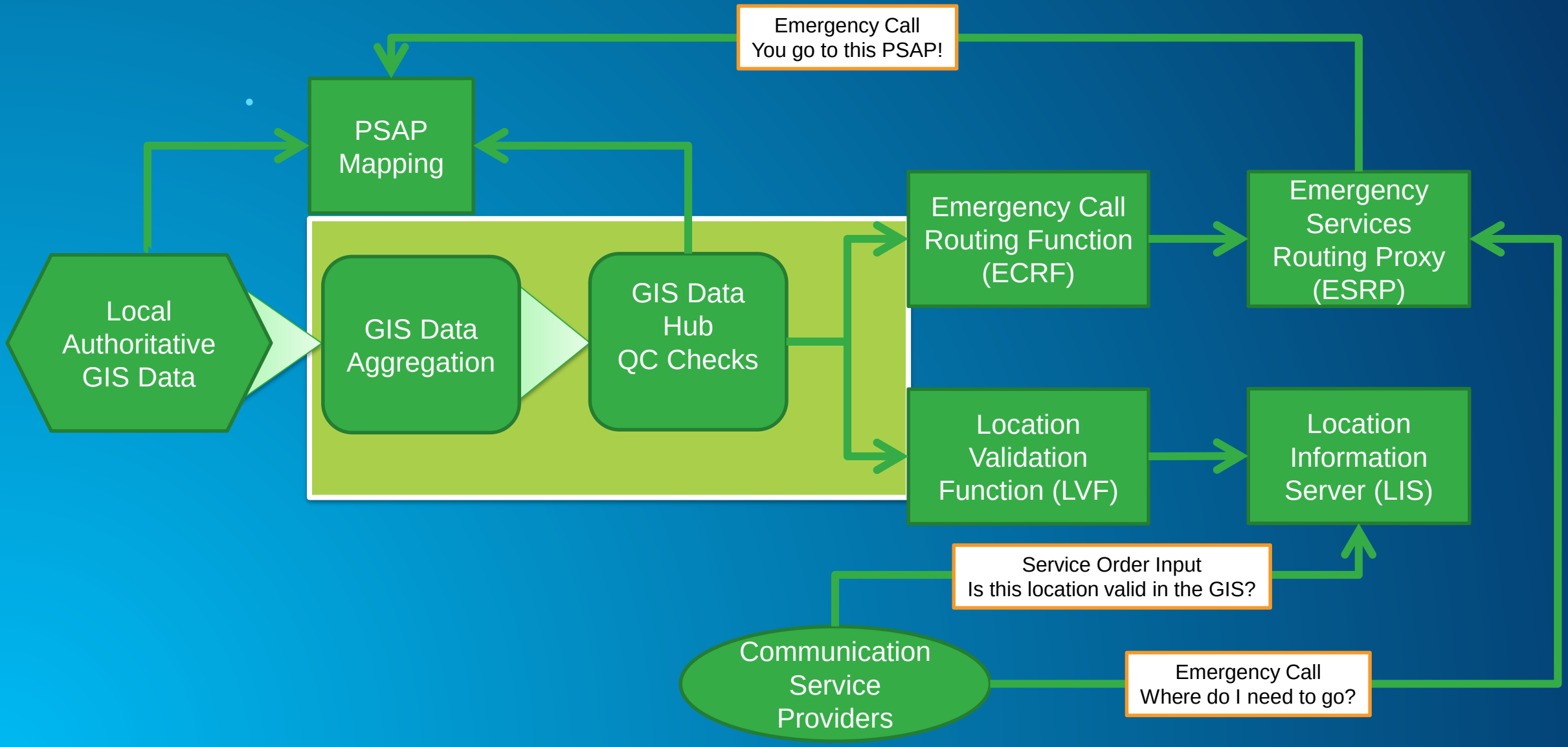
Street centerline

Address Points

Boundaries

Maintained by **GIS department**

GIS Data Flow



The Stakeholders and Associated Challenges

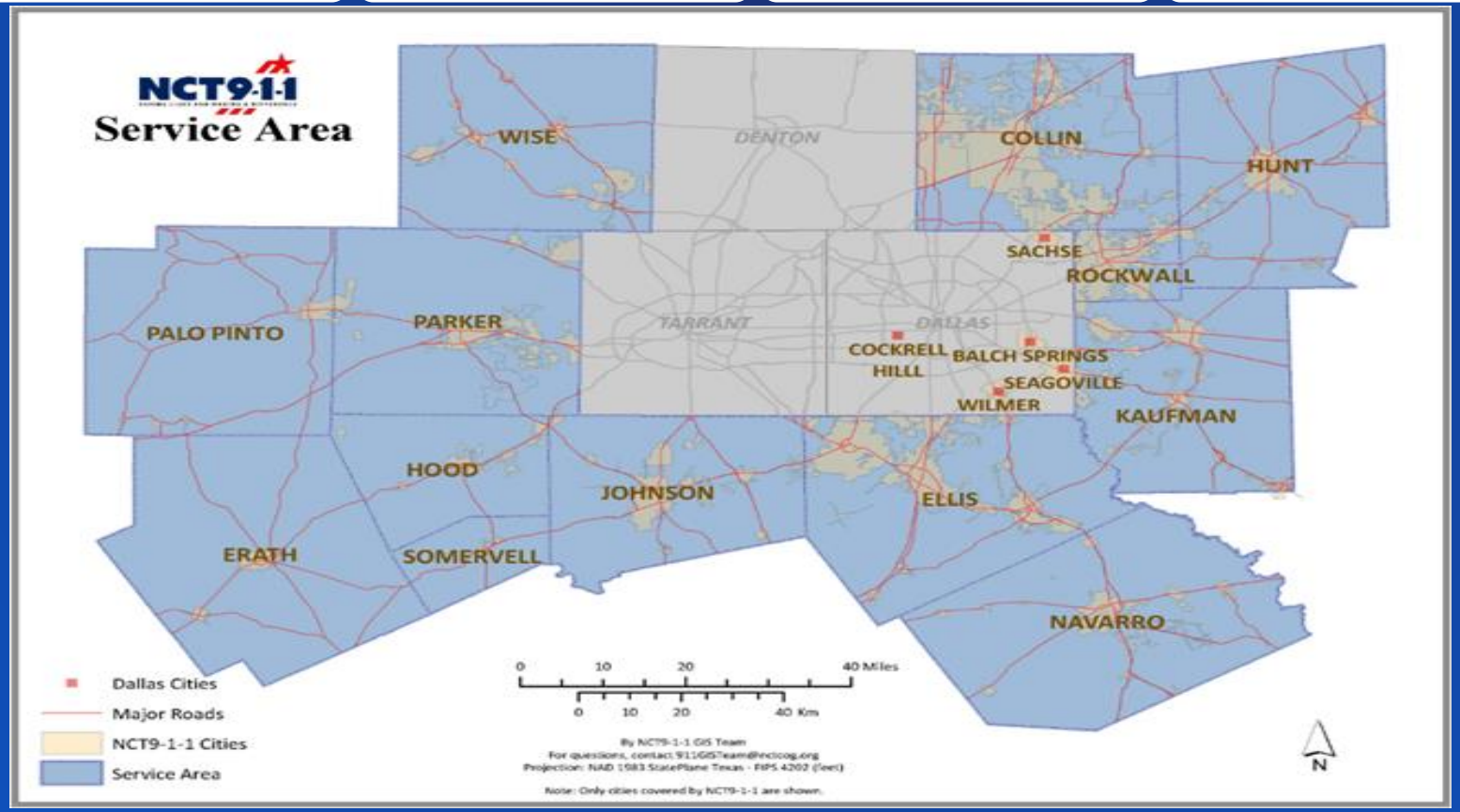
Who is Involved?

- 9-1-1 Addressing Authorities (local, regional, state)
- Regional 9-1-1 districts
- Politicians and legislators
- First Responders
- 9-1-1 Telecommunicators
- Public Safety vendors
- Emergency callers

It's more than just GIS data! It's about "Saving Lives and Making A Difference"

NCT9-1-1 Region

Counties	Population	PSAPs	Municipalities
13	1.6 million	43	156



Challenges for NCT9-1-1

Multiple Addressing Authorities

- Dissimilar addressing ordinances
- Disparate data schemas
- Varying levels of GIS knowledge

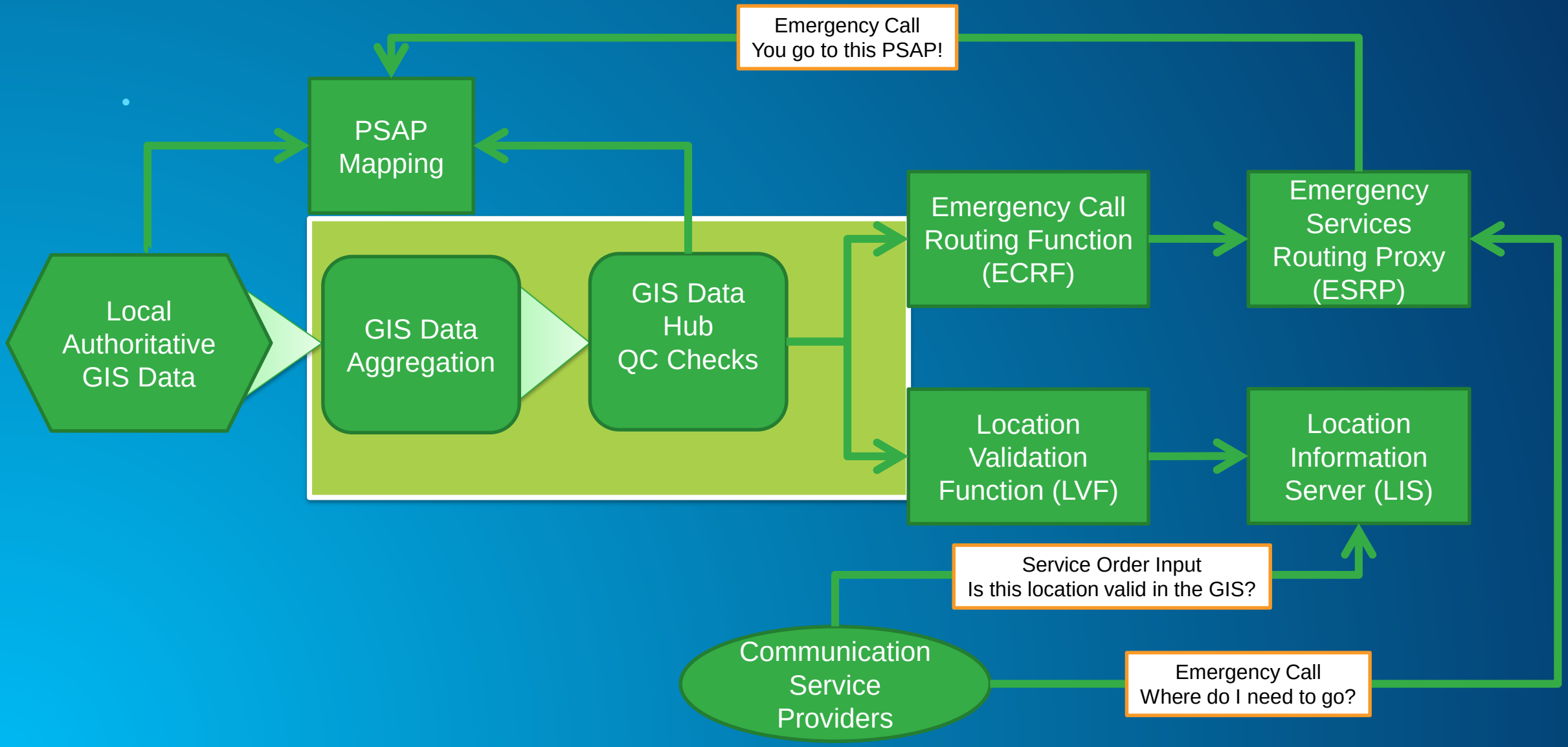
Employee turnover in local government

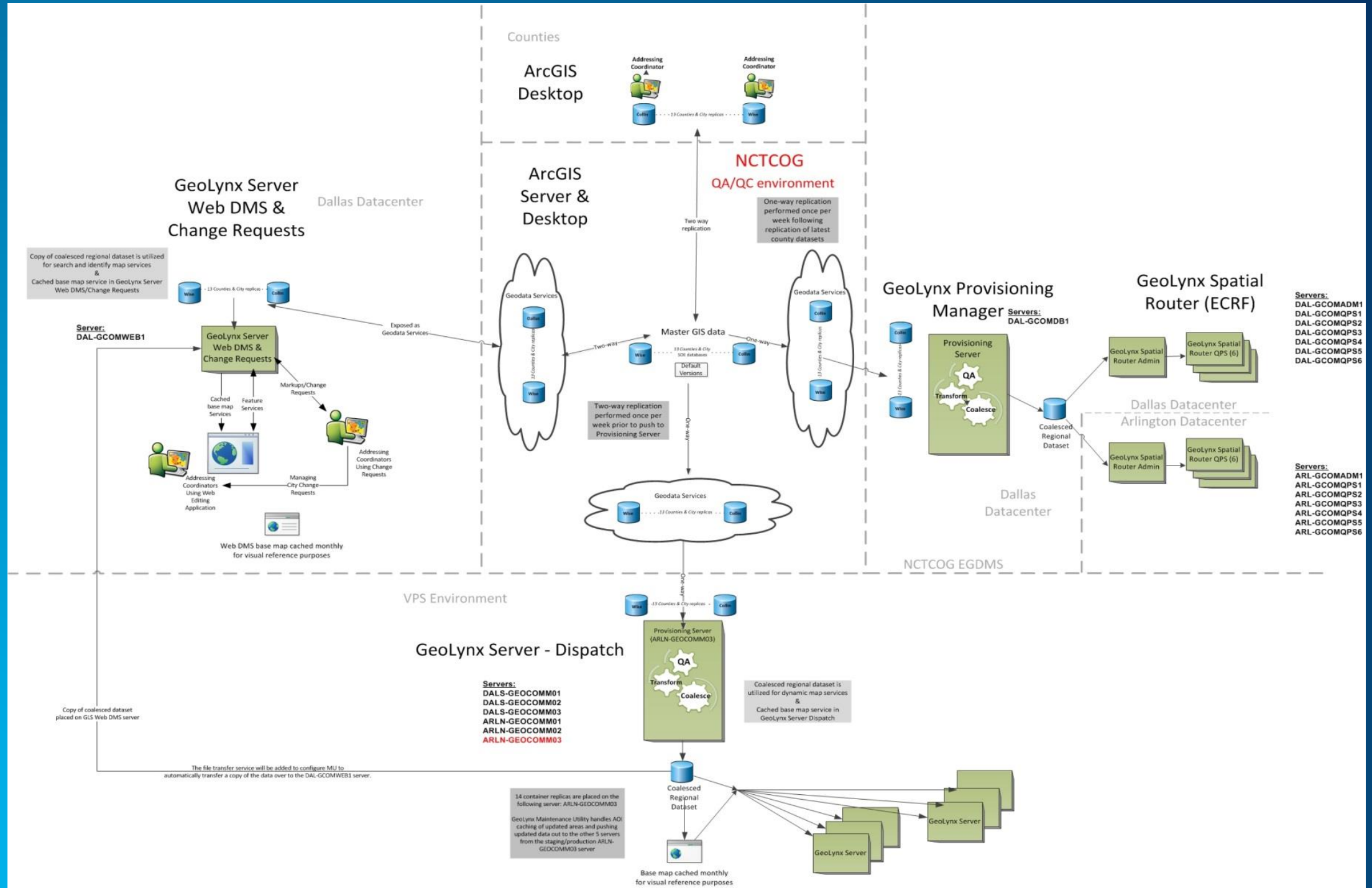
~500,000 GIS errors prior to NG9-1-1 implementation

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

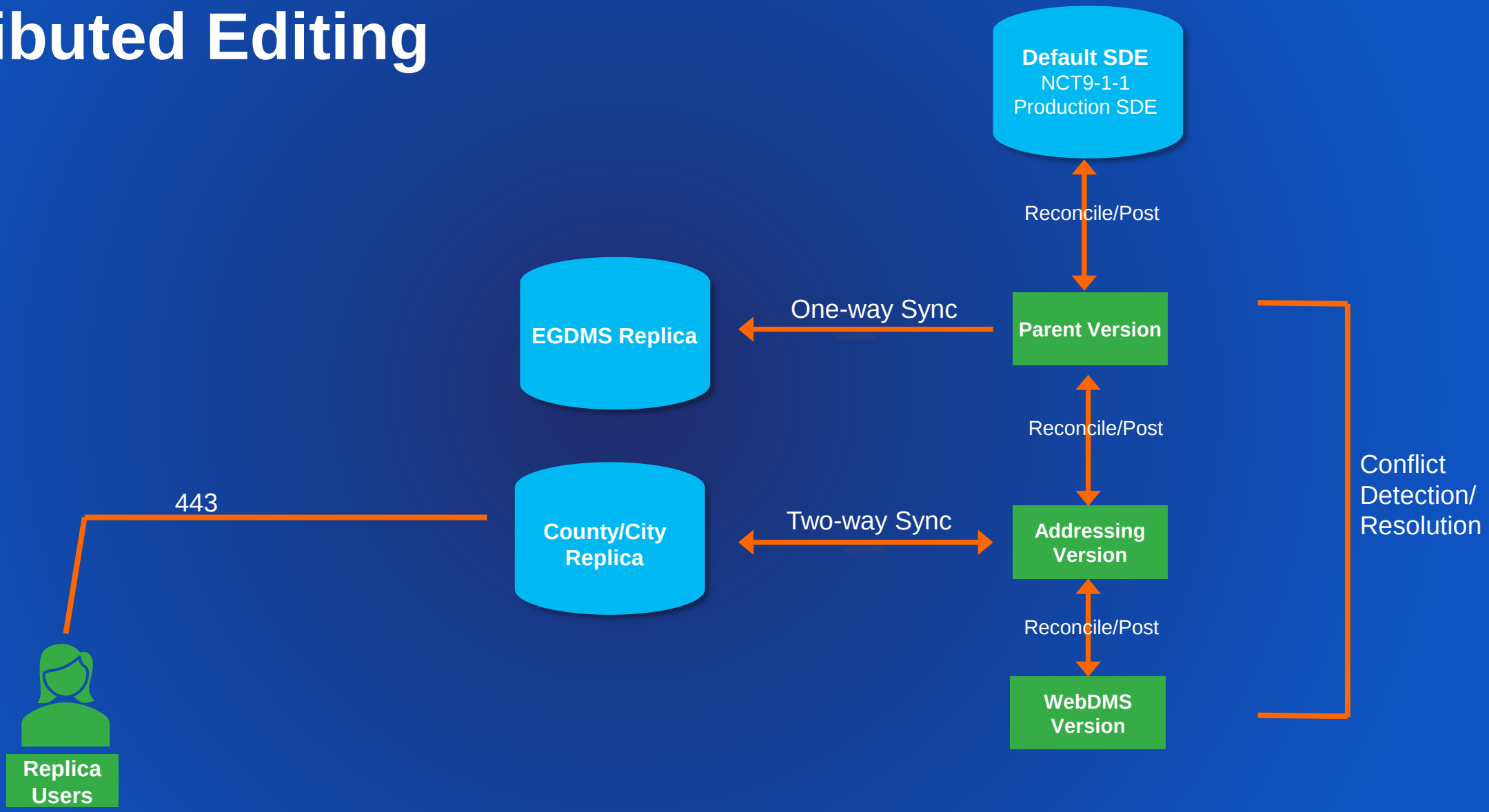
The Tools

GIS Data Flow



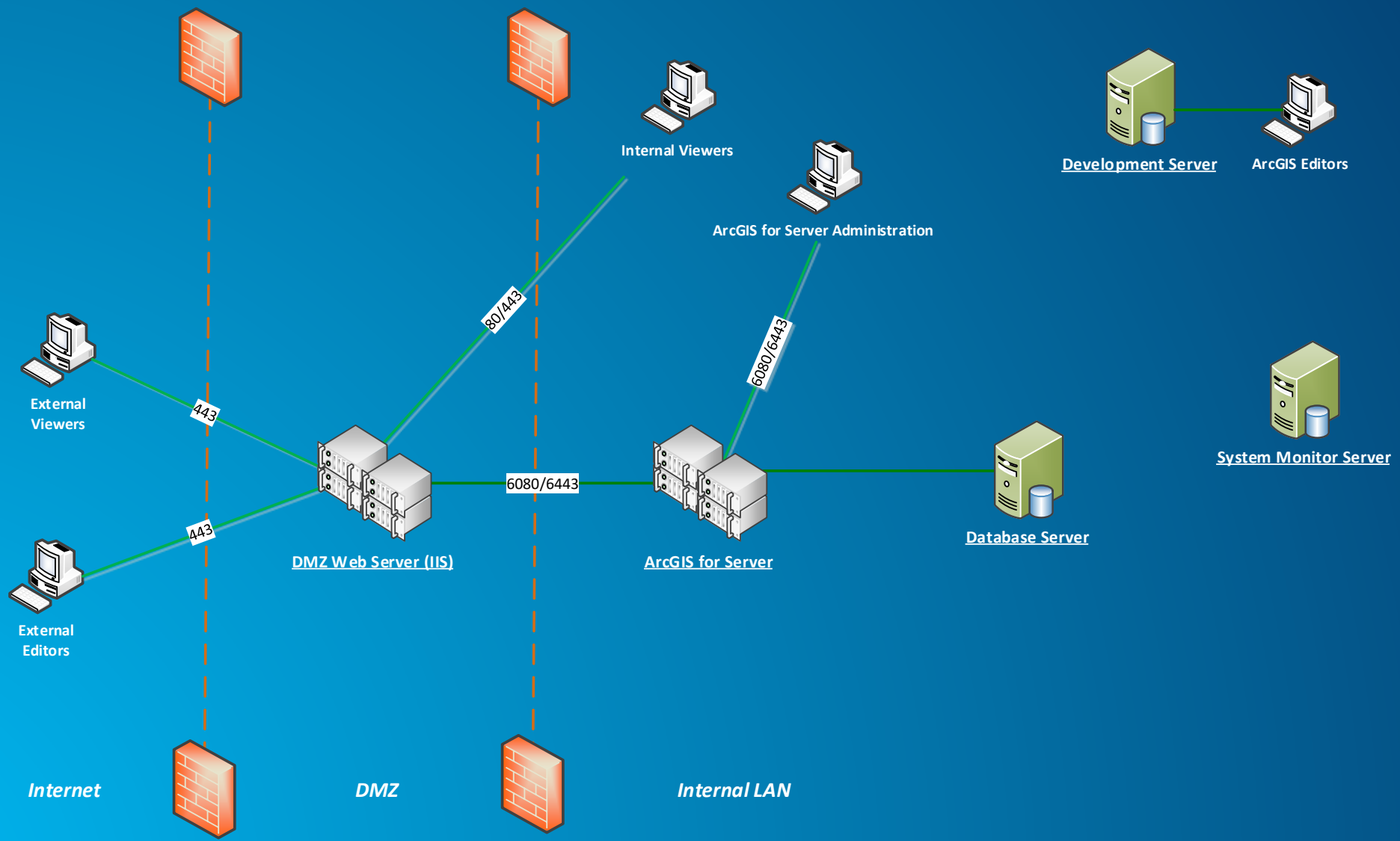

Counties
ArcGIS Desktop
Addressing Coordinator
Addressing Coordinator
Collin
13 Counties & City replicas
Wise
NCTCOG
QA/QC environment
ArcGIS Server & Desktop
Two way replication
One-way replication performed once per week following replication of latest county datasets
GeoLynx Server Web DMS & Change Requests
Dallas Datacenter
Copy of coalesced regional dataset is utilized for search and identify map services & Cached base map service in GeoLynx Server Web DMS/Change Requests
Server:
DAL-GCOMWEB1
GeoLynx Server Web DMS & Change Requests
Exposed as Geodata Services
Geodata Services
Dallas
Two-way
Master GIS data
13 Counties & City SDE databases
Default Versions
One-way
Geodata Services
Markups/Change Requests
Cached base map Services
Feature Services
Addressing Coordinators Using Change Requests
Addressing Coordinators Using Web Editing Application
Managing City Change Requests
Web DMS base map cached monthly for visual reference purposes
Two-way replication performed once per week prior to push to Provisioning Server
Geodata Services
GeoLynx Provisioning Manager
Servers:
DAL-GCOMDB1
Provisioning Server
QA
Transform
Coalesce
Coalesced Regional Dataset
GeoLynx Spatial Router (ECRF)
GeoLynx Spatial Router Admin
GeoLynx Spatial Router QPS (6)
Servers:
DAL-GCOMADM1
DAL-GCOMQPS1
DAL-GCOMQPS2
DAL-GCOMQPS3
DAL-GCOMQPS4
DAL-GCOMQPS5
DAL-GCOMQPS6
Dallas Datacenter
Arlington Datacenter
GeoLynx Spatial Router Admin
GeoLynx Spatial Router QPS (6)
Servers:
ARL-GCOMADM1
ARL-GCOMQPS1
ARL-GCOMQPS2
ARL-GCOMQPS3
ARL-GCOMQPS4
ARL-GCOMQPS5
ARL-GCOMQPS6
Dallas Datacenter
NCTCOG EGDMS
VPS Environment
GeoLynx Server - Dispatch
Provisioning Server (ARLN-GEOCOMM03)
QA
Transform
Coalesce
Servers:
DALS-GEOCOMM01
DALS-GEOCOMM02
DALS-GEOCOMM03
ARLN-GEOCOMM01
ARLN-GEOCOMM02
ARLN-GEOCOMM03
Coalesced regional dataset is utilized for dynamic map services & Cached base map service in GeoLynx Server Dispatch
Copy of coalesced dataset placed on GLS Web DMS server
The file transfer service will be added to configure MU to automatically transfer a copy of the data over to the DAL-GCOMWEB1 server.
Coalesced Regional Dataset
14 container replicas are placed on the following server: ARLN-GEOCOMM03
GeoLynx Maintenance Utility handles AOI caching of updated areas and pushing updated data out to the other 5 servers from the staging/production ARLN-GEOCOMM03 server
GeoLynx Server
GeoLynx Server
Base map cached monthly for visual reference purposes

Distributed Editing



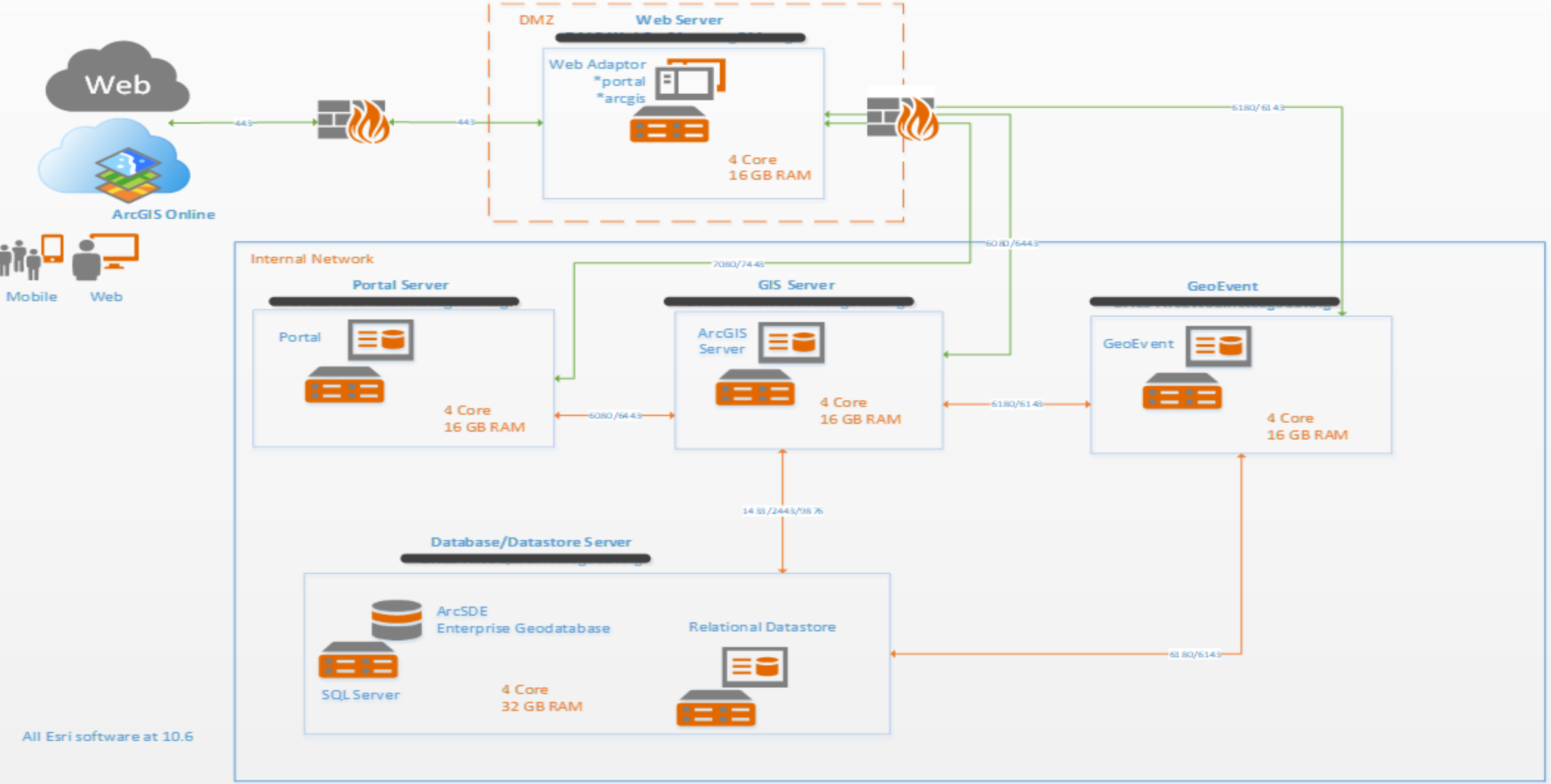
It's more than just GIS data! It's about "Saving Lives and Making A Difference."

NCTCOG 9-1-1 GIS: ArcGIS Platform

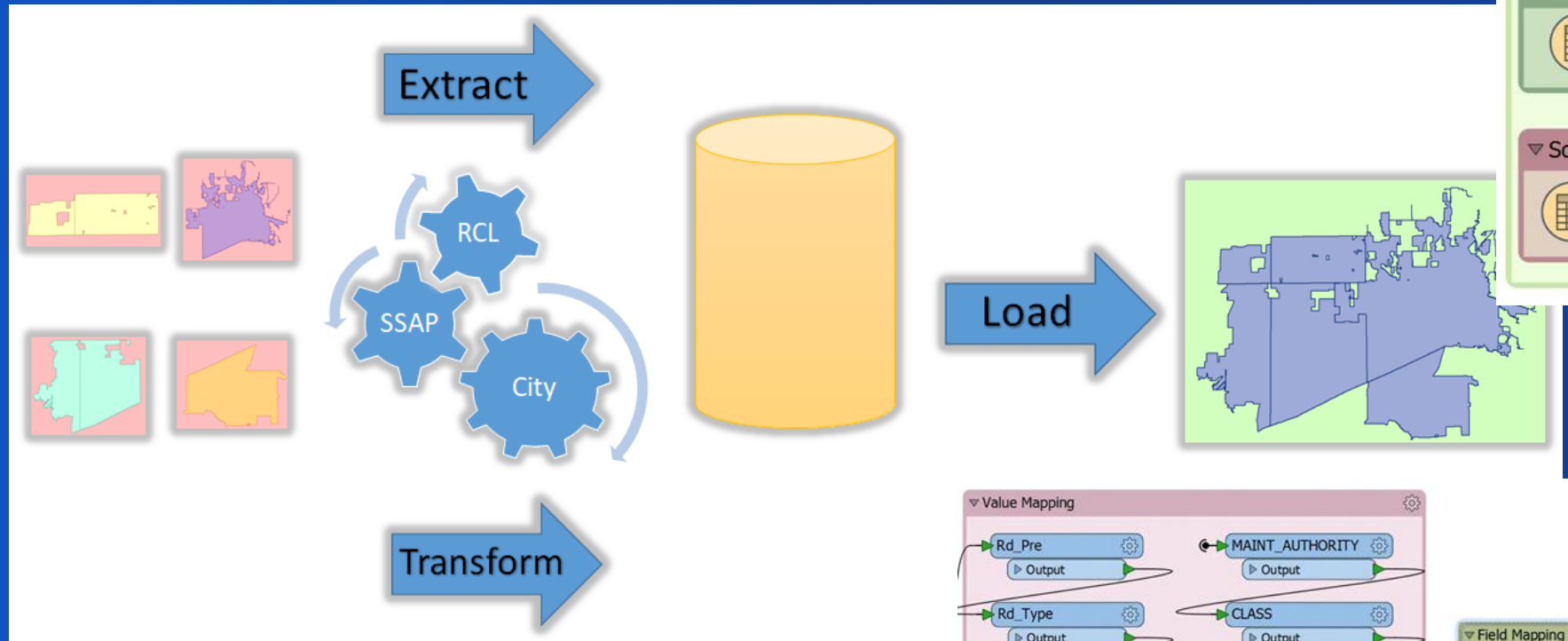


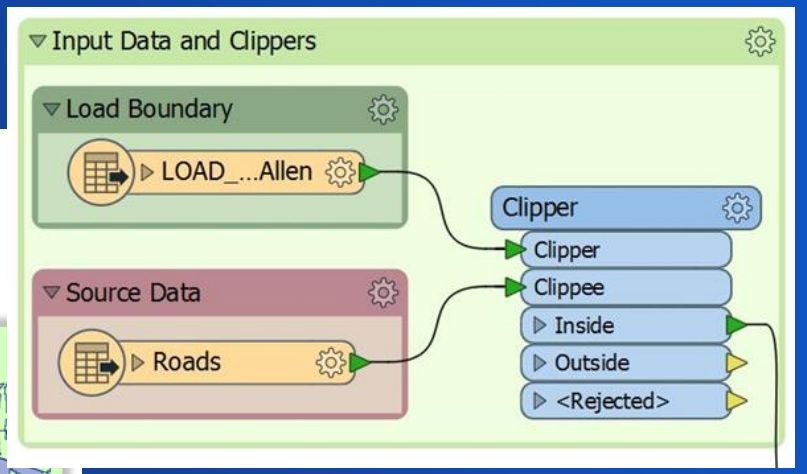
It's more than just GIS data! It's about "Saving Lives and Making A Difference."

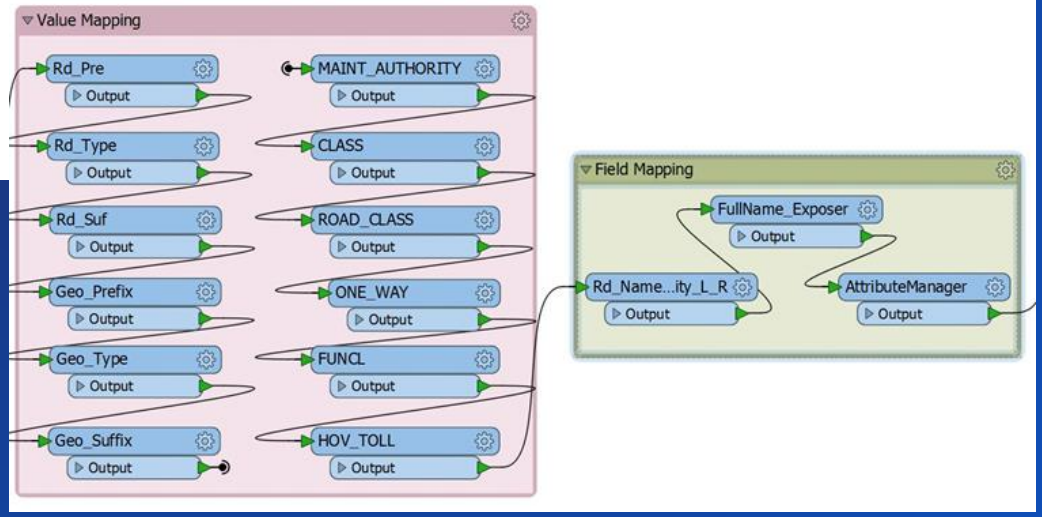
NCT9-1-1 Esri Enterprise



Schemas – Extract Transform and Load (ETL)

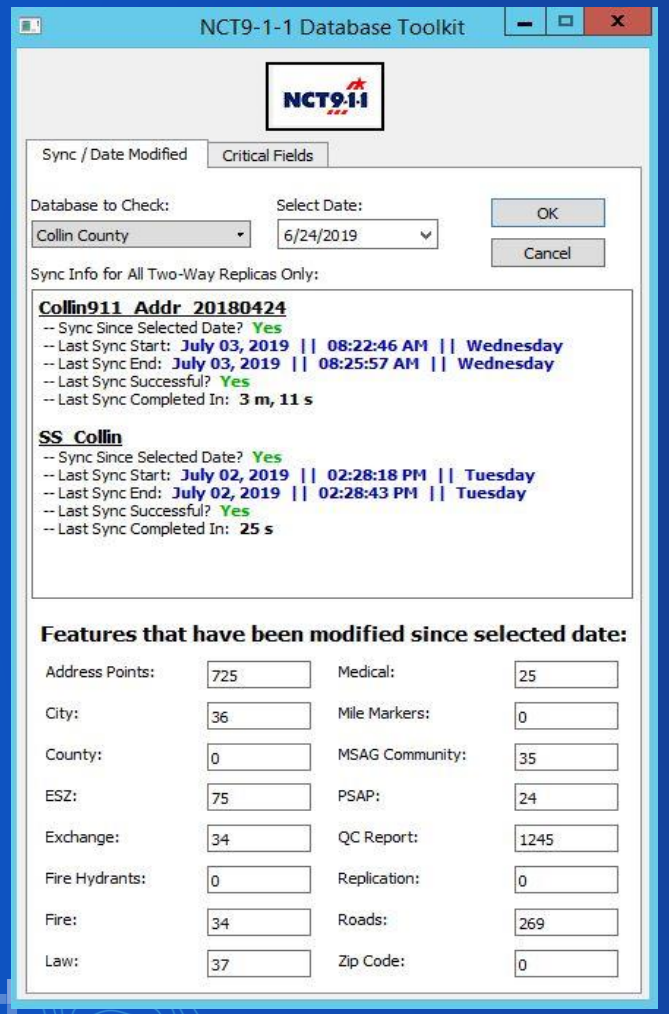




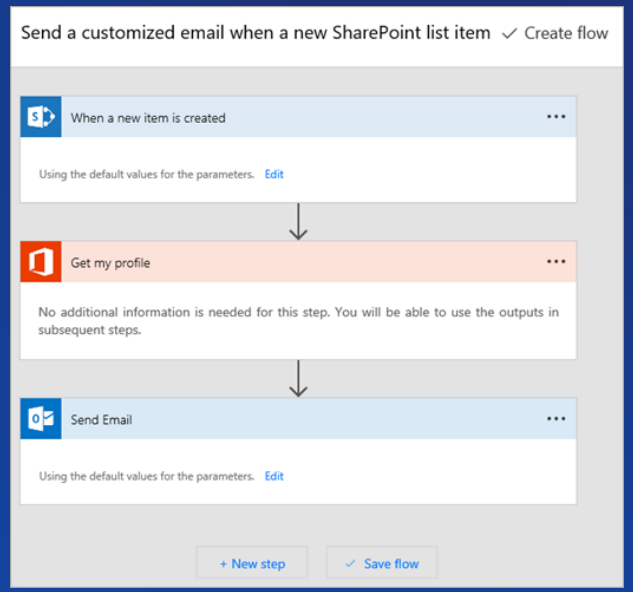


It's more than just GIS data! It's about "Saving Lives and Making A Difference."

Automation



Custom scripts automate
- Database syncing
- Database health
- Web-services
- GIS Error Distribution



Internal task tracking
- Agile
- Daily standups
- Collaborative boards
- Transparency

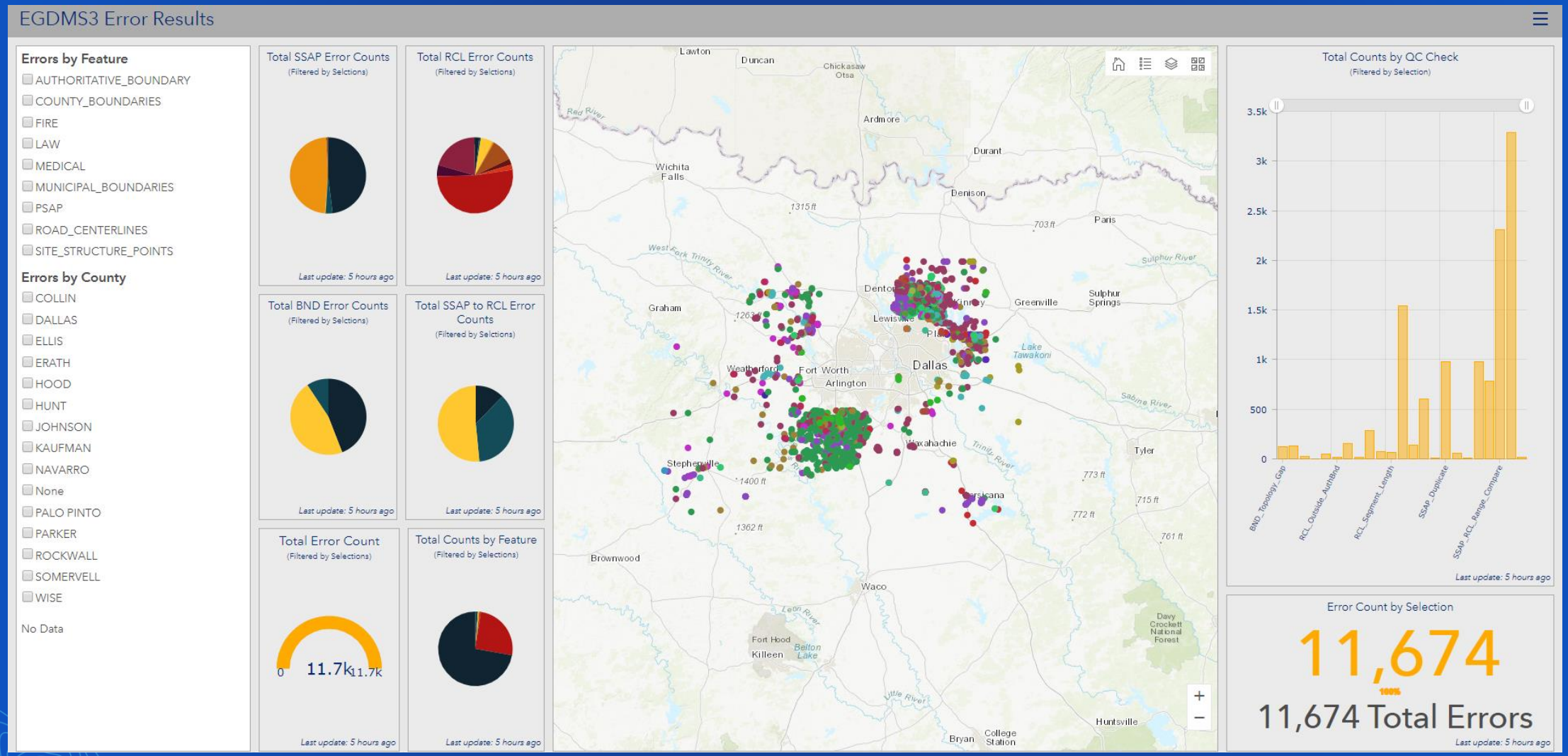
Collaborative tools
- SharePoint and flows
- Training portals
- Policies and processes

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

Automation - Drones

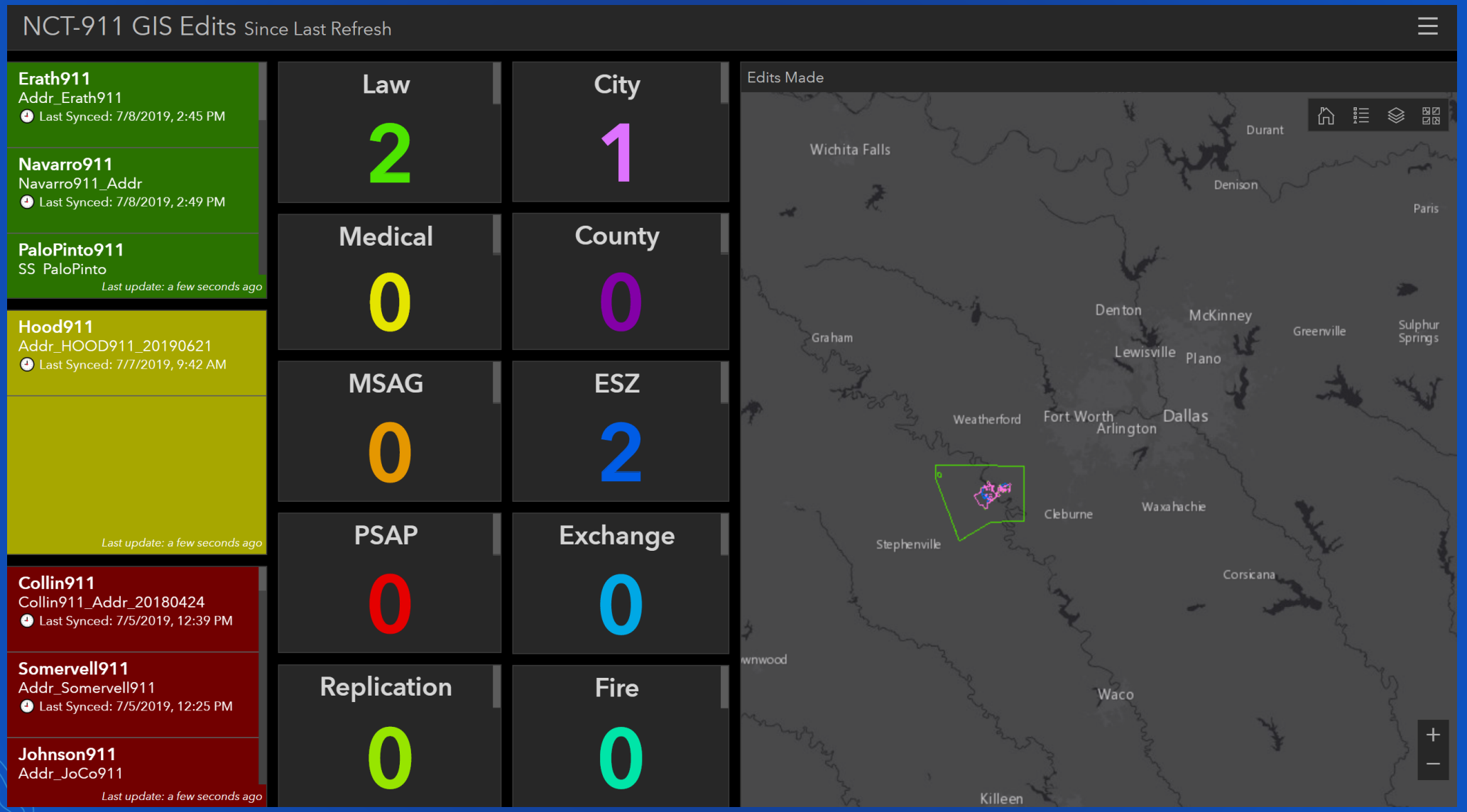
- Improving addressing efficiency and accuracy
- Aiding first responders with more current imagery

Dashboards



It's more than just GIS data! It's about "Saving Lives and Making A Difference."

Dashboards



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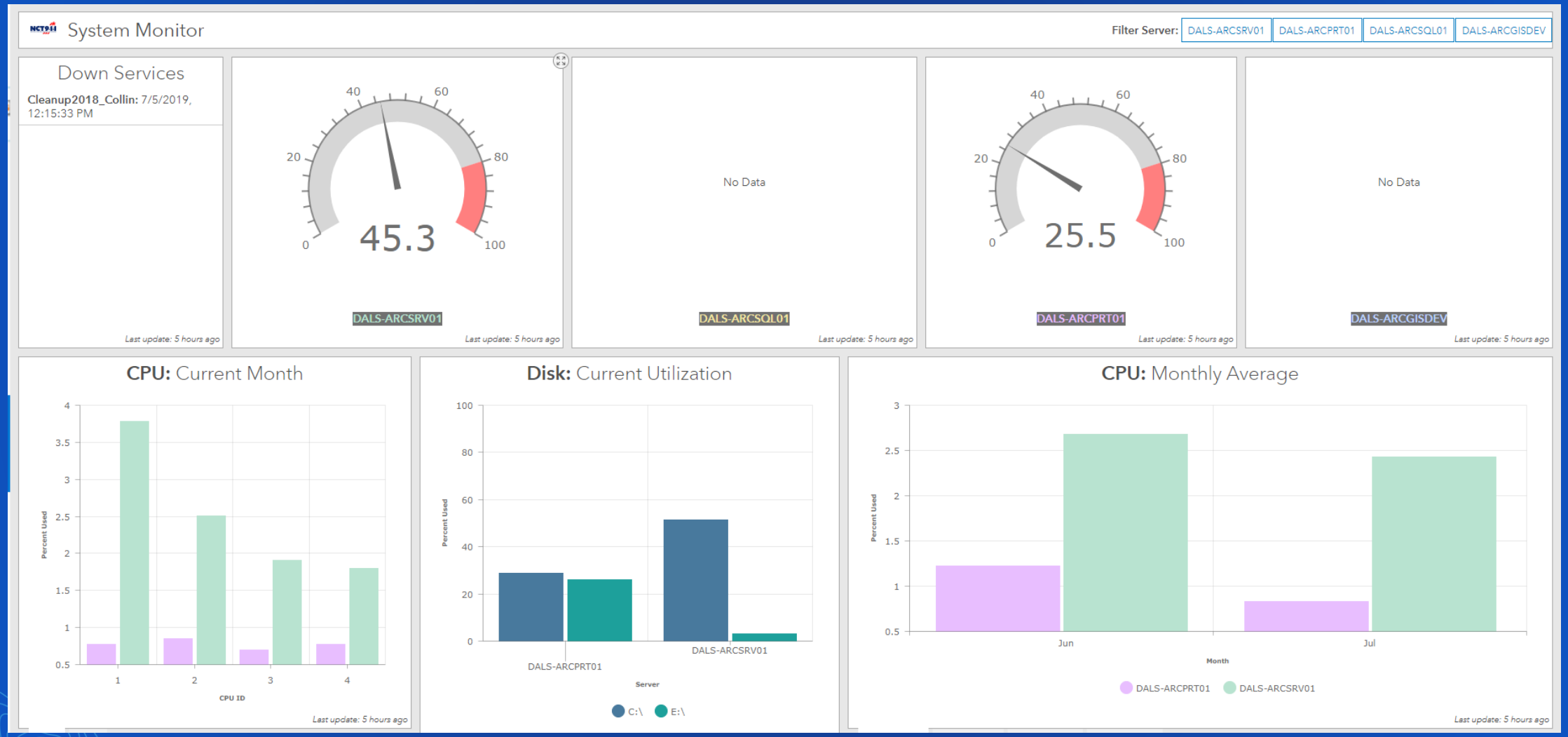
Dashboards



It's more than just GIS data! It's about "Saving Lives and Making A Difference."

The Processes

NCT9-1-1 Processes

Daily Replication and Quality Control

GIS Updates to Public Safety Applications

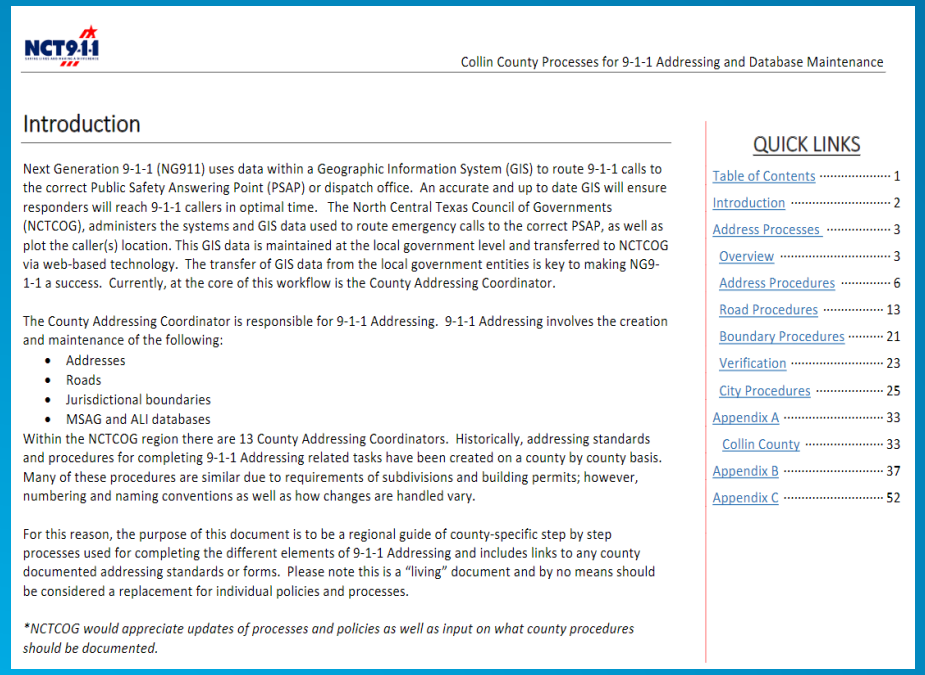
- Vector data every 72 hours
- Aerials every 30-60 days

Standard Operating Procedures

Methods of Procedures

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

SOPs and MOPs



NCT9-1-1

Collin County Processes for 9-1-1 Addressing and Database Maintenance

Introduction

Next Generation 9-1-1 (NG911) uses data within a Geographic Information System (GIS) to route 9-1-1 calls to the correct Public Safety Answering Point (PSAP) or dispatch office. An accurate and up to date GIS will ensure responders will reach 9-1-1 callers in optimal time. The North Central Texas Council of Governments (NCTCOG), administers the systems and GIS data used to route emergency calls to the correct PSAP, as well as plot the caller(s) location. This GIS data is maintained at the local government level and transferred to NCTCOG via web-based technology. The transfer of GIS data from the local government entities is key to making NG9-1-1 a success. Currently, at the core of this workflow is the County Addressing Coordinator.

The County Addressing Coordinator is responsible for 9-1-1 Addressing. 9-1-1 Addressing involves the creation and maintenance of the following:

- Addresses
- Roads
- Jurisdictional boundaries
- MSAG and ALI databases

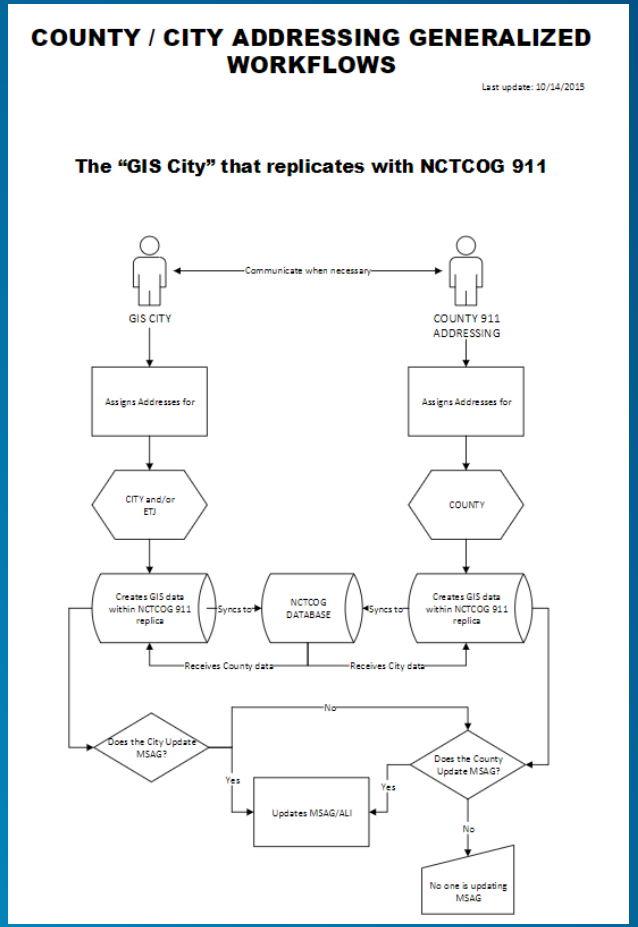
Within the NCTCOG region there are 13 County Addressing Coordinators. Historically, addressing standards and procedures for completing 9-1-1 Addressing related tasks have been created on a county by county basis. Many of these procedures are similar due to requirements of subdivisions and building permits; however, numbering and naming conventions as well as how changes are handled vary.

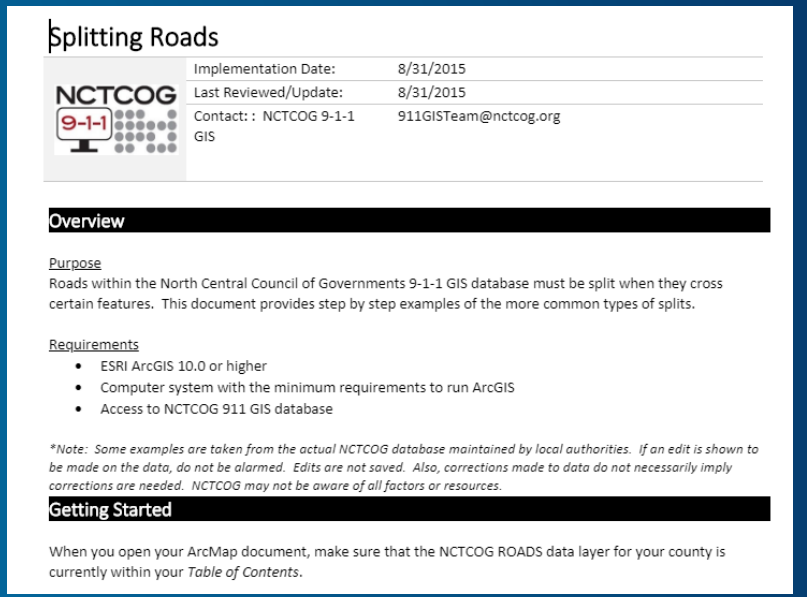
For this reason, the purpose of this document is to be a regional guide of county-specific step by step processes used for completing the different elements of 9-1-1 Addressing and includes links to any county documented addressing standards or forms. Please note this is a "living" document and by no means should be considered a replacement for individual policies and processes.

**NCTCOG would appreciate updates of processes and policies as well as input on what county procedures should be documented.*

QUICK LINKS

Table of Contents 1
Introduction 2
Address Processes 3
Overview 3
Address Procedures 6
Road Procedures 13
Boundary Procedures 21
Verification 23
City Procedures 25
Appendix A 33
Collin County 33
Appendix B 37
Appendix C 52





Splitting Roads

NCTCOG 9-1-1

Implementation Date:	8/31/2015
Last Reviewed/Update:	8/31/2015
Contact: : NCTCOG 9-1-1 GIS	911GISTeam@nctcog.org

Overview

Purpose

Roads within the North Central Council of Governments 9-1-1 GIS database must be split when they cross certain features. This document provides step by step examples of the more common types of splits.

Requirements

- ESRI ArcGIS 10.0 or higher
- Computer system with the minimum requirements to run ArcGIS
- Access to NCTCOG 911 GIS database

**Note: Some examples are taken from the actual NCTCOG database maintained by local authorities. If an edit is shown to be made on the data, do not be alarmed. Edits are not saved. Also, corrections made to data do not necessarily imply corrections are needed. NCTCOG may not be aware of all factors or resources.*

Getting Started

When you open your ArcMap document, make sure that the NCTCOG ROADS data layer for your county is currently within your *Table of Contents*.

It's more than just GIS data! It's about "Saving Lives and Making A Difference."

Conclusion

Standardized Data – Fitting it all Together

If YOU build your data to the standard…

and your NEIGHBOR builds their data to the standard…

and THEIR neighbor builds their data to the standard…

Common Challenges

GIS may not be public safety grade – conflicting purposes

Meeting and understanding NENA requirements

Inconsistent GIS data management processes and data

GIS staff

- Short-handed
- Concern to take on public safety responsibility
- Other priorities

Benefits of Going Through this Effort

- Preparing GIS data for NG9-1-1
- Complying with nationally-recognized public safety standards and best practices
- Improving GIS data quality
- Supporting mission critical 9-1-1 environments and accurate location information
- Save lives!

Road Map

- Identify stakeholders
- Present goals and collaboration needs
- Develop workflows (diagrams & MOPs)
- Establishing efficient, consistent GIS data processes, including regular communication
- Provide feedback and incentives on GIS QC results for continuous improvement and maintenance

Thank you!

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Jessica Beierman – jbeierman@geo-comm.com