



# LOCAL GIS FOR COMMUNICATIONS



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# GIS in 911



# *Agenda*

- Introductions
- 911 History without GIS
- Introduction of GIS - Enhanced 911 and Cell Phones
- GIS gets a boost - NextGen 911

*911 without GIS.*



# 911 without GIS.

- First 911 call was placed in Haleyville AL on February 16<sup>th</sup>, 1968. 6 Days later the second was placed in Nome AK.



# *911 without GIS*

- Keys to 911 success without GIS
  - Every home had a phone
  - Every phone had an address
  - Every address was in a database

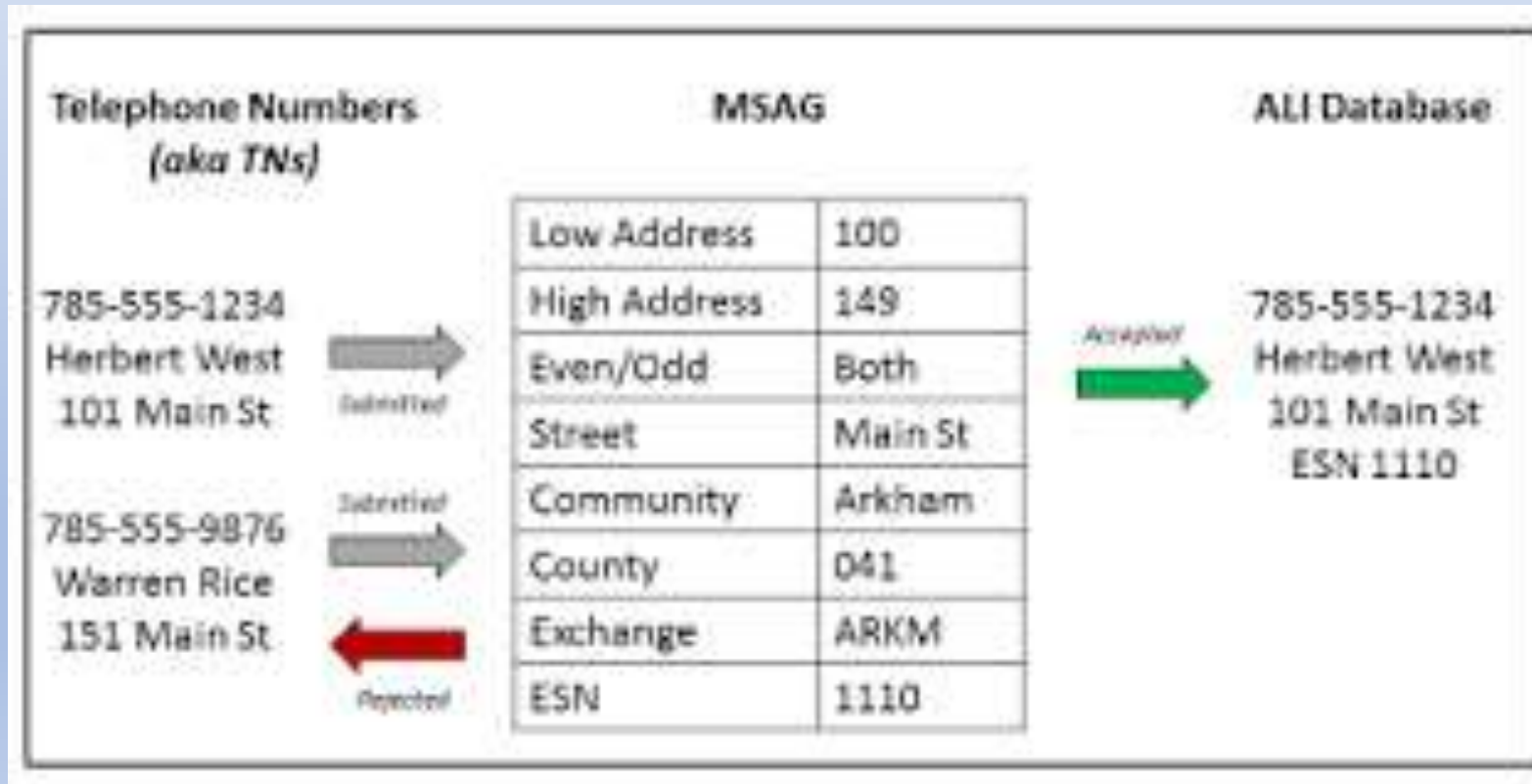
# *Introduction of GIS*





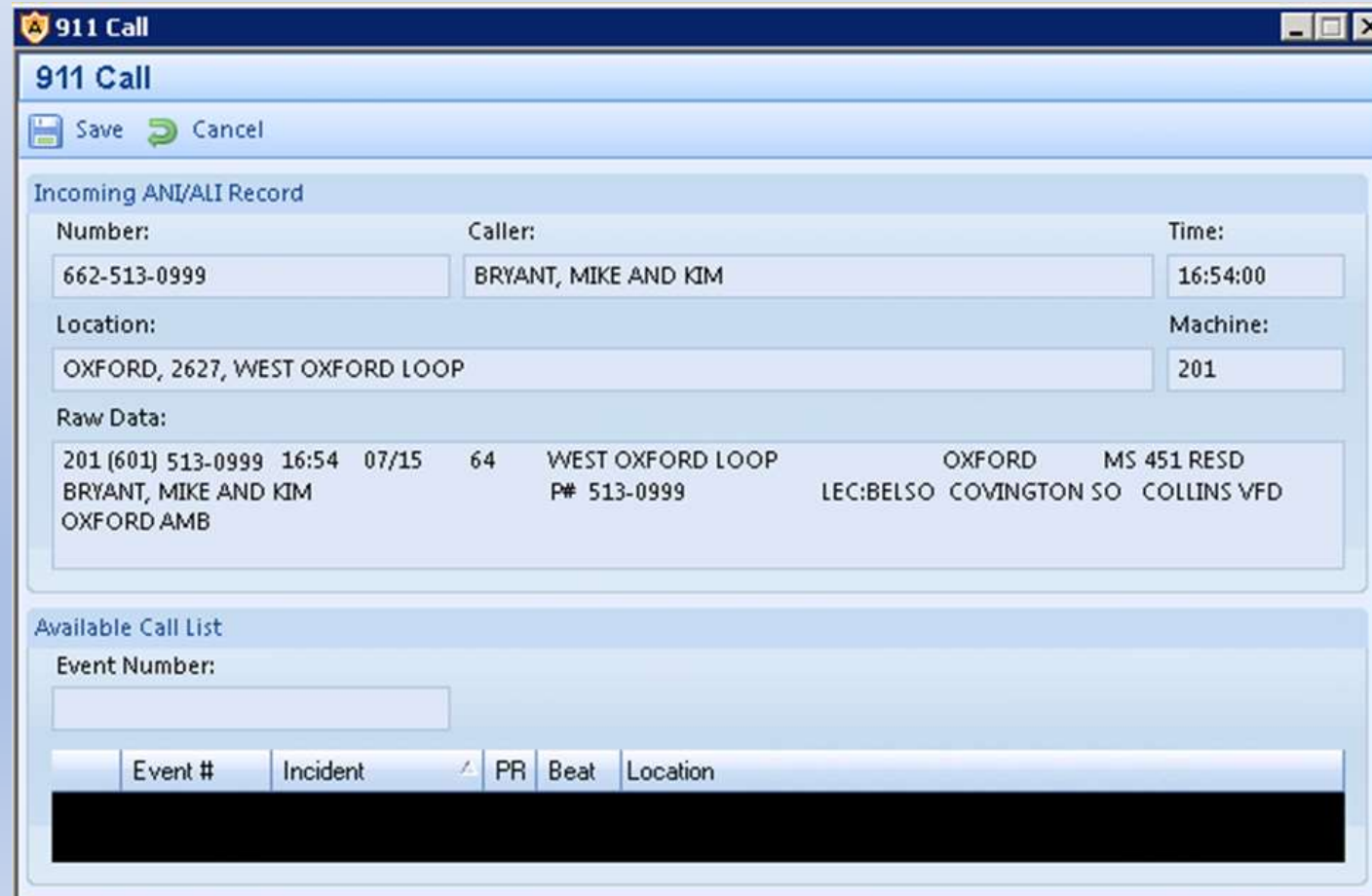
# Introduction of GIS

- MSAG – Master Street Address Guide



# Introduction of GIS

- Automatic number identification (ANI) and automatic location identifier (ALI)



The screenshot shows a software window titled "911 Call" with a standard Windows-style title bar. Below the title bar is a header area with "911 Call" and two buttons: "Save" and "Cancel".

The main content area is divided into three sections:

- Incoming ANI/ALI Record:** This section contains several input fields:
  - Number:** 662-513-0999
  - Caller:** BRYANT, MIKE AND KIM
  - Time:** 16:54:00
  - Location:** OXFORD, 2627, WEST OXFORD LOOP
  - Machine:** 201
- Raw Data:** This section displays a text-based record:

```
201 (601) 513-0999 16:54 07/15 64 WEST OXFORD LOOP OXFORD MS 451 RESD  
BRYANT, MIKE AND KIM P# 513-0999 LEC:BELSO COVINGTON SO COLLINS VFD  
OXFORD AMB
```
- Available Call List:** This section has an "Event Number:" label and an empty text input field. Below it is a table header with columns: "Event #", "Incident", "PR", "Beat", and "Location". The table body is currently empty.

# *Introduction of GIS*



# *Introduction of GIS*

*GIS feeds both*

*ECC and CAD*

*Field Personnel and MDTs*



# *Introduction of GIS*

- Common Layers used in CAD and the Field
  - Jurisdictional Boundaries
  - Response Areas
    - Fire
    - Police
  - Address Points
  - Street Centerline
    - Alias field or table for alternate names or spelling
  - Common Place Names
    - Alias field or table for alternate names or spelling
  - Routable Network
    - Closest Facility and Route

# *Introduction of GIS*

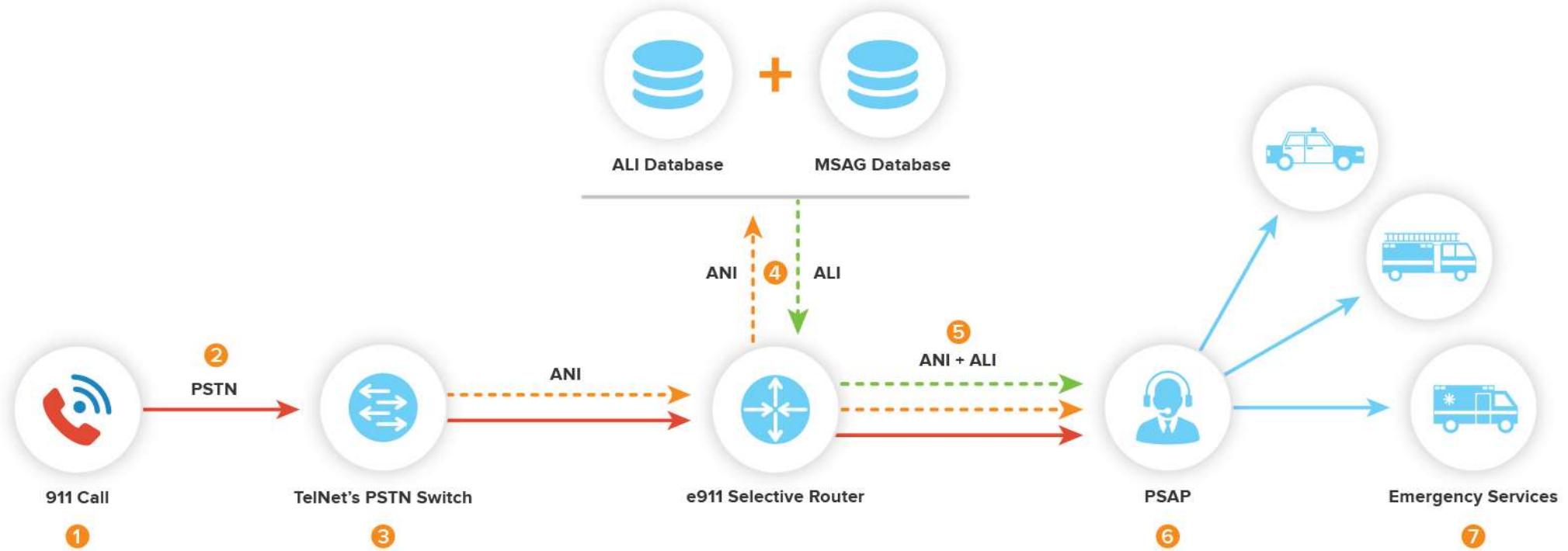
- Pros of GIS in CAD and the Field

- Visual of the map helpful for all.
- Data maintained by Jurisdiction

- Cons of GIS in CAD and the Field

- Stopped at Jurisdictional Lines
- Lack of communication between GIS and ECC
- GIS personnel with little to no public safety background.
- Updates too infrequent.

# Enhance 911



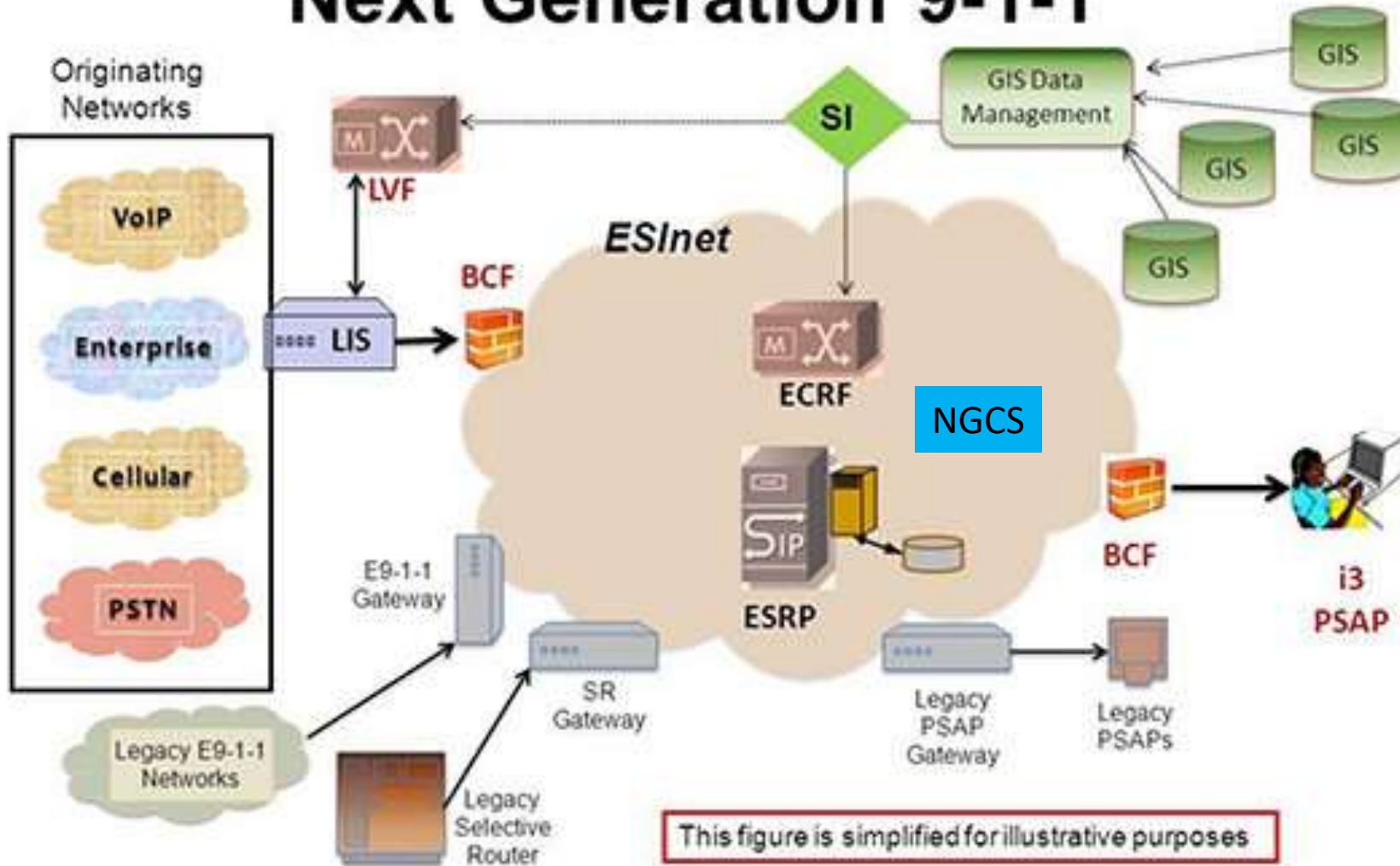


*GIS gets a boost!!!*



# GIS gets a boost!!!

## Next Generation 9-1-1



# *GIS gets a boost!!!*

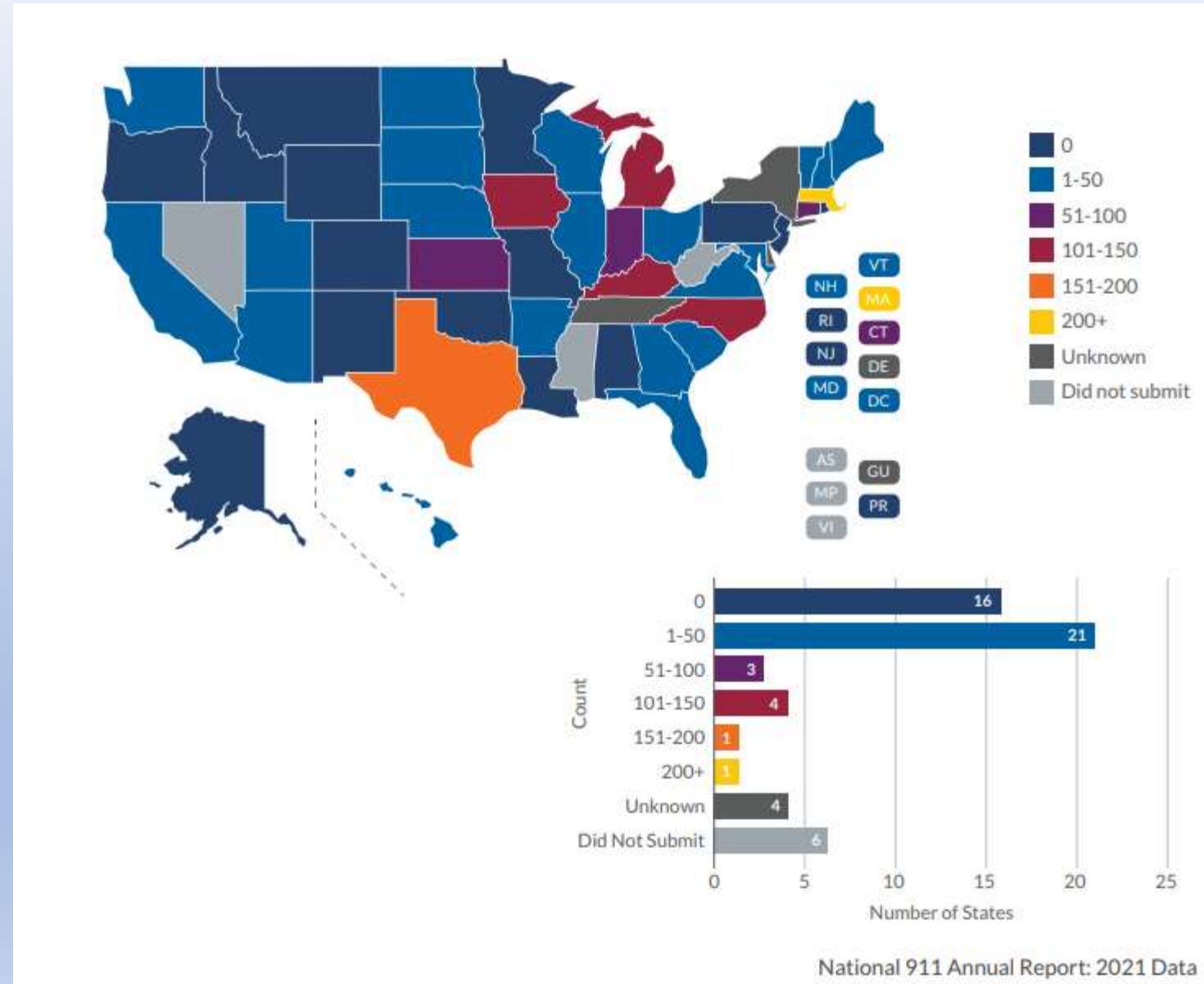
- Required Data for Ng911
  - Provisioning Boundary
  - PSAP Boundary
  - ESZ (Emergency Service Zones)
    - Fire
    - EMS
    - Police
  - Address Points
  - Street Centerline

# *GIS gets a boost!!!*

- GIS and NG911
  - Common data schema with NENA Data model
    - Now NENA working on version 3.
  - ESInet Vendor
    - GIS data is used to geocode legacy data (MSAG and ANI/ALI)
    - Vendors can't communicate with each other
    - Concerns over projections and transformations
- CAD 2 CAD
  - Lots of discussions on how to transfer calls and the data from one PSAP to another
    - This includes the GIS data.
  - Edge matching and lining up data

# GIS gets a boost!!!

- 2021 Annual Report showing state progress for NG911.
- 24 states with no PSAP or no data submitted.
- As of today, Maryland has 21 of 24 Primary PSAP on NG911.
- [LINK](#)



# GIS gets a boost!!!

## North Carolina NextGen 911 - #NextGen911isNowGen911inNC

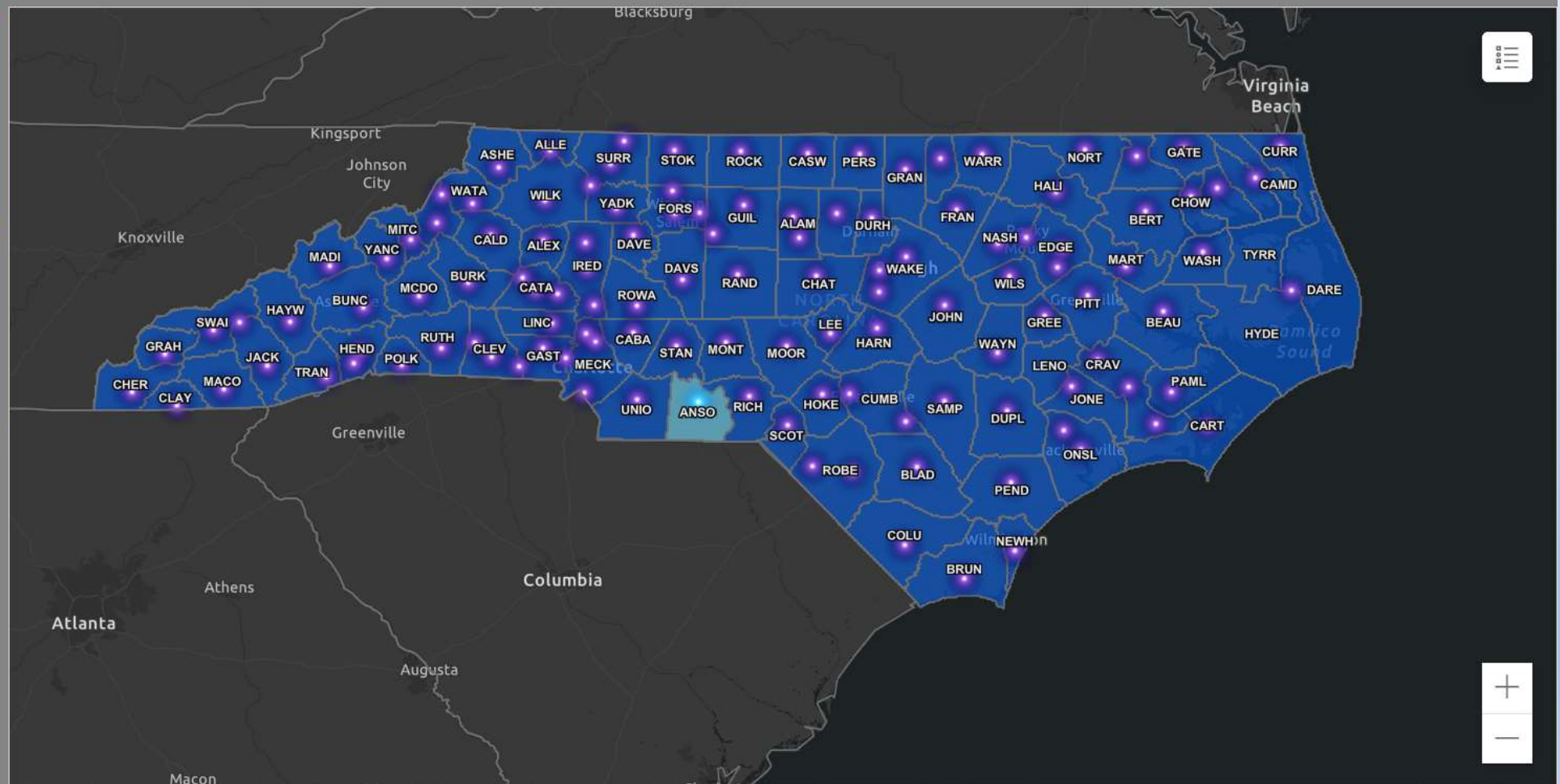
Emergency Services IP Network (ESInet) Status

Live on ESInet

124

Active Projects

1



# *GIS gets a boost!!!*



# *GIS gets a boost!!!*



# *Where to Next???*

- 1. Vision and Collaboration.*
- 2. GIS Professionals that can speak public safety.*
- 3. Engage with the community.*



**Peter Hanna**  
**IT Specialist III**  
**Montgomery County Police**  
**[peter.hanna@montgomerycountymd.gov](mailto:peter.hanna@montgomerycountymd.gov)**



# GIS Communications



# Mapping in ArcGIS for Microsoft 365

Integrated Smart Mapping & Location Services

- Mapping
- Geocoding
- Geoenrichment
- Document Geotagging

## Power Automate



Spatial Automation

## Excel



Spatially Enable

## Power BI



Location Intelligence

## SharePoint



Discover and Share

## Teams



Consistent Collaboration

Integrating  
ArcGIS Basemaps  
& User Web Maps

ArcGIS Online  
and Enterprise

... Bringing Mapping to Everyone



Power Automate

+ New flow Import

Flows

Cloud flows Desktop flows Business process flows Shared with me

Name	Modified
Incident Notification	1 d ago
Fire Code Violation Follow-up	2 wk ago
Fire Watch Submission	2 mo ago
Strategic Plan Update	3 mo ago
Annual Report Feedback Form	4 mo ago
NCM Progress Submission	5 mo ago
Community Partner Survey Notification	8 mo ago



### Fire Watch

**CFD Member:**  
Allow the responsible party to read and complete the form below. At the end, there is a short section for you to complete. Once you submit the form, the fire marshal's office will receive a notification and the responsible party will receive additional information. If you have immediate questions, reach out to OPS 2 or the on-call fire marshal.

**A Fire Watch is always required when an occupied building's fire suppression or detection systems are not fully operational.**  
If authorized by the Charlottesville Fire Department, a fire watch may be temporarily used while a fire detection or fire protection system is out of service for repairs or alterations.

The Fire Watch is needed when the building is occupied. If the building is unoccupied, a fire watch is not needed.

**Building or Business Name\***  
Enter the name of the building or business name.

**Name: Responsible Person\***  
Enter the first and last name of the individual who is taking responsibility for the fire watch.

**Shed fire that extended to the house | Fire Incident**

CreationDate  
12/10/2021, 9:55 AM

Location Description  
Shed fire that extended to the house

Brief Description

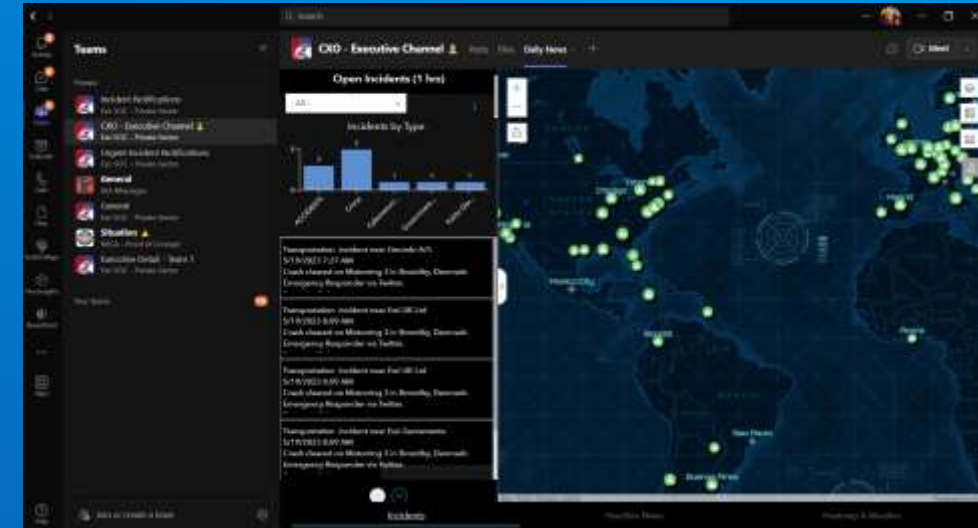
City of Charlottesville, County of Albemarle, VITA, West. Powered by Esri

# ArcGIS for Teams

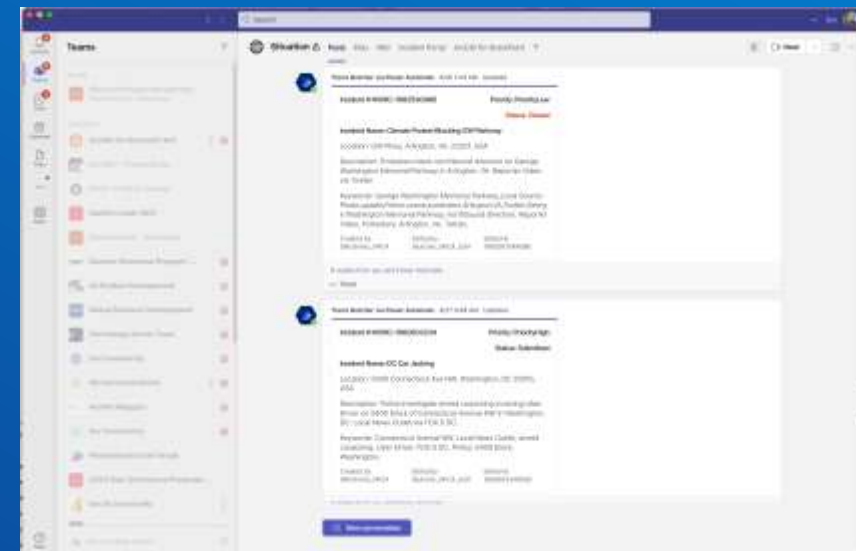
ArcGIS for Microsoft 365 Product Family

Create maps, share content, and manage data in a centralized location while leveraging ArcGIS.

1. ArcGIS where people are already collaborating
2. Real time map-based collaboration
3. Search, view, create, and share using natural language



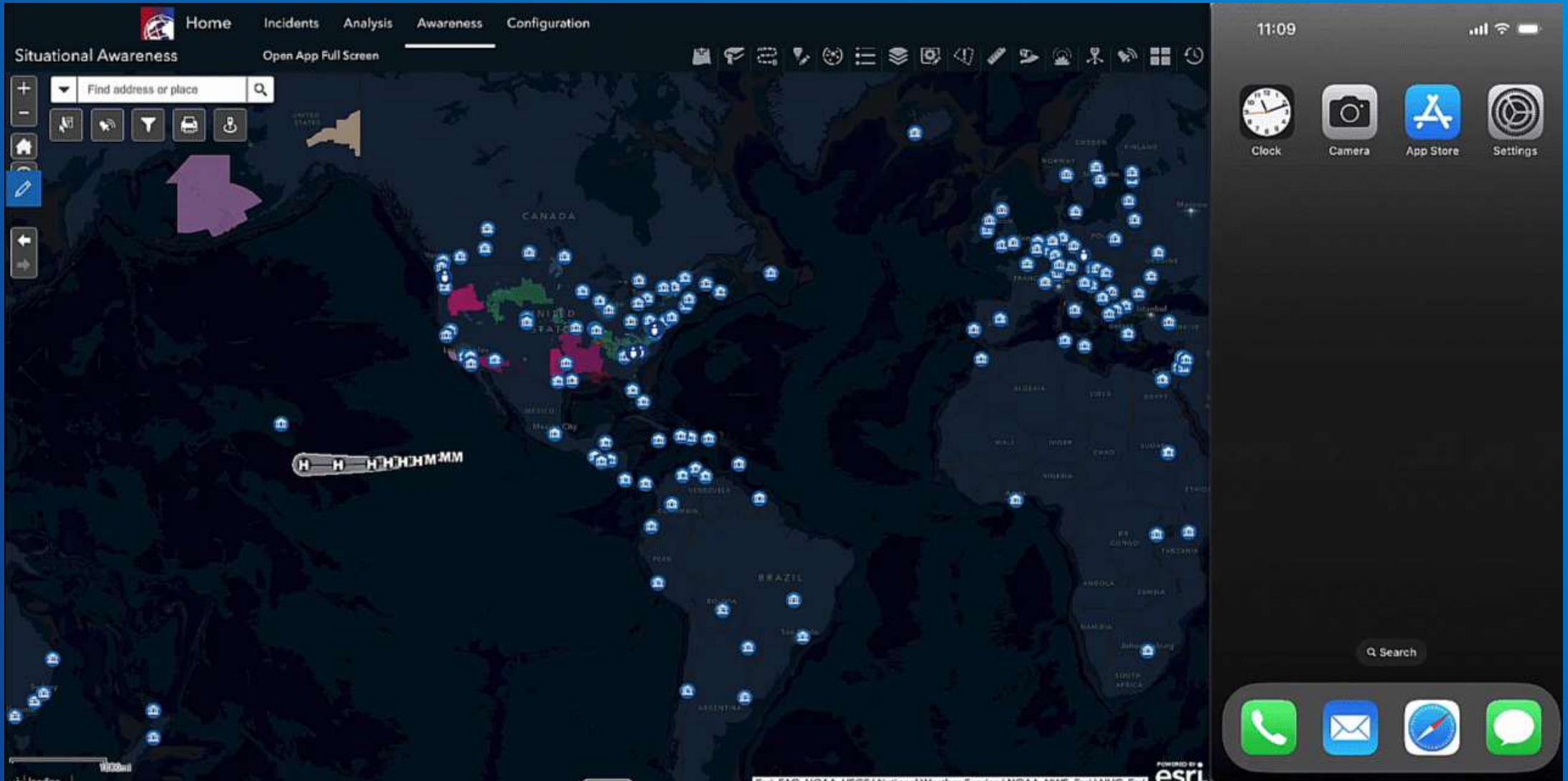
Esri Security Operations Solution



Northern California Regional Intelligence Center – Proof of Concept

... Consistent Collaboration

# Notify in ArcGIS



# OREGON REGIONAL



## TACTICAL INTEROPERABLE COMMUNICATIONS FIELD OPERATIONS GUIDE (TICFOG)

Version 2.1  
Dated: April 06, 2017



# NIFOG

## National Interoperability Field Operations Guide

Version 2.0  
AUGUST 2021

Cybersecurity and Infrastructure Security Agency  
U.S. Department of Homeland Security



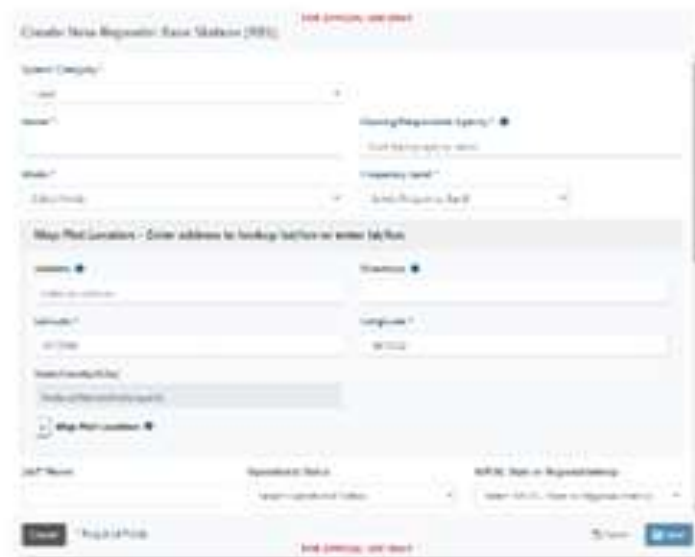
## Illinois Tactical Interoperable Communications Plan (TICP)

January 2017

**Final**

Version 2.4

As Approved by the Statewide Interoperability  
Executive Committee (SIEC) on 01/19/2017







# SC ESF-2 Situational Awareness & Reporting Tool

Last Updated: 8/30/2023 15:47

Home

Situational Report

ESF-2 Status Overview

PATCON

## Palmetto 800 System Impacts

No Reported Impacts



Prev

Next >

PSAPS Re-Routed	PSAP's Impacted	Palmetto 800 Sites in Site Trunking	Palmetto 800 Sites on Generator	Palmetto 800 Sites in Fail Soft	Cache Radios Deployed	MCVs Deployed	Mobile Towers Deployed	SCMA TGs	PATCON Repeaters	Regional TGs	LECOMM TGs
0	0	0	0	0	62	0	0	7	0	0	0

# GIS & First Responder Communications

Charles Laird  
*Technology Specialist*

*NAPSG InSPIRE  
November 16<sup>th</sup>, 2023*



**NC FIRSTTECH**



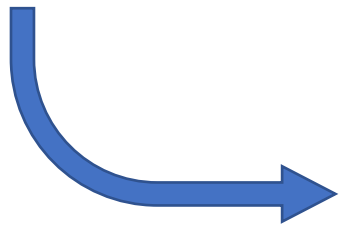
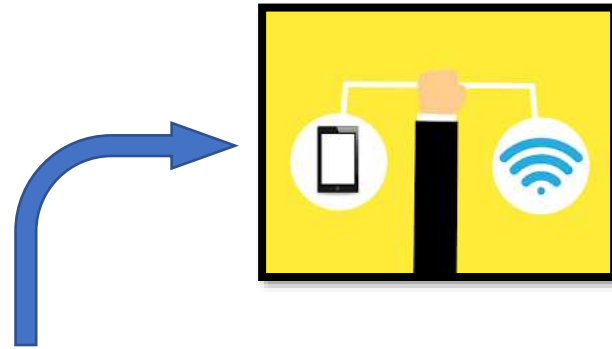
# Program Overview


## Who are we?

- Established July 2018





NC FIRSTTECH





### North Carolina State Emergency Response Team


#### Communications Branch (ESF2) - Force Laydown

	Cache Radios	MCVs	State Event TGs	DPR Talkgroups	PSAPs Re-Routed	PSAP Re-Route Plans	PSAPs Impacted*	COMCs	COMLs	Infrastructure
	<b>0</b>	<b>0</b>	<b>0/32</b>	<b>0/90</b>	<b>0</b>	<b>0</b>	<b>0/127</b>	<b>0</b>	<b>0</b>	
<b>Incident Name</b>	COMTs	INTDs	TERT Teams/INTDs	IT STX Teams/TSLs	ALXCs	Mobile Towers	VPR Tiers on Generator	VIPER Tiers off air	Viper Tower DOS	<b>Green</b>
	<b>0</b>	<b>0</b>	<b>0/0</b>	<b>0/0</b>	<b>0</b>	<b>0</b>	<b>0/233</b>	<b>0</b>	<b>0</b>	

**Key**


- Planned 911 Reroute
- Executed 911 Reroute
- PSAP Receiving Rescan
- PSAP Out of Service
- COMWJ Personnel
- Comm Equipment
- Mobile Comm Veh
- Tower off air
- Tello off air (N)

**Communications Lifelines**




Strap QR Code Here linked to google drive

**ALL GREEN**




**911 and Dispatch**



**Green**

**Responder Comm**



**Green**

**Notes Section**



Last Opened  
11/13/23 11:09



## NCEM Communications Infrastructure and Resource Management

WBO	Phone	Cons Radio	Status	CBO	Phone	Cons Radio	Status	EBO	Phone	Cons Radio	Status	NCEM	Phone	Radio	Internet	NCSHP Radio Cache	Total	Out	Mission #
Alexander	Yes	Yes	G	Alamance	Yes	Yes	G	Beaufort	Yes	Yes	G	RCC-East	G	Yes	Yes	Cache 10	40		
Alleghany	Yes	Yes	G	Anson	Yes	Yes	G	Bertie	Yes	Yes	G	RCC-Central	G	Yes	Yes	Cache 11	40		
Ashe	Yes	Yes	G	Caswell	Yes	Yes	G	Bladen	Yes	Yes	G	RCC-West	G	Yes	Yes	Cache 12	40		
Avery	Yes	Yes	G	Chatham	Yes	Yes	G	Brunswick	Yes	Yes	G	SEOC/24HR Watch	G	Yes	Yes	Cache 13	40		
Buncombe	Yes	Yes	G	Davidson	Yes	Yes	G	Camden	Yes	Yes	G	911 NMAC	G	Yes	Yes	Cache 14	40		
Burke	Yes	Yes	G	Davie	Yes	Yes	G	Carteret	Yes	Yes	G	VIPER NOC	G	Yes	Yes	Cache 15	40		
Cabarrus	Yes	Yes	G	Durham	Yes	Yes	G	Chowan	Yes	Yes	G	USCG Sector	G	Yes	Yes	Cache 16	40		
Caldwell	Yes	Yes	G	Edgecombe	Yes	Yes	G	Columbus	Yes	Yes	G					Cache 17	40		
Catawba	Yes	Yes	G	Forsyth	Yes	Yes	G	Craven	Yes	Yes	G	STR Radio	Avail	Deploy	Mission #	Cache 18	40		
Cherokee	Yes	Yes	G	Franklin	Yes	Yes	G	Cumberland	Yes	Yes	G	DPR1 (Chowan)	44			Cache 19	40		
Clay	Yes	Yes	G	Granville	Yes	Yes	G	Currituck	Yes	Yes	G	DPR2 (Lenior)	44			Cache 20	40		
Cleveland	Yes	Yes	G	Guilford	Yes	Yes	G	Dare	Yes	Yes	G	DPR3 (NHC)	44			VIPER Status	On Air	Off Air	Site Trnk
EBCI	Yes	Yes	G	Halifax	Yes	Yes	G	Duplin	Yes	Yes	G	DPR4 (Nash)	44			Tower Status	241		
Gaston	Yes	Yes	G	Harnett	Yes	Yes	G	Gates	Yes	Yes	G	DPR5 (Surry)	44			Degraded Sites			
Graham	Yes	Yes	G	Johnston	Yes	Yes	G	Greene	Yes	Yes	G	DPR6 (Moore)	44						
Haywood	Yes	Yes	G	Lee	Yes	Yes	G	Hertford	Yes	Yes	G	DPR7 (Charlotte)	100						
Henderson	Yes	Yes	G	Montgomery	Yes	Yes	G	Hoke	Yes	Yes	G	DPR8 (Burke)	44						
Iredell	Yes	Yes	G	Moore	Yes	Yes	G	Hyde	Yes	Yes	G	DPR9 (Buncombe)	44						
Jackson	Yes	Yes	G	Nash	Yes	Yes	G	Jones	Yes	Yes	G								
Lincoln	Yes	Yes	G	Northampton	Yes	Yes	G	Lenoir	Yes	Yes	G	USAR Comms	Avail	Deployed	Dual?				
Macon	Yes	Yes	G	Orange	Yes	Yes	G	Martin	Yes	Yes	G	USAR 2	Yes	N/A					
Madison	Yes	Yes	G	Person	Yes	Yes	G	New Hanover	Yes	Yes	G	USAR 3	Yes	N/A		COMC Status	Total	Avail	Deploy
McDowell	Yes	Yes	G	Randolph	Yes	Yes	G	Onslow	Yes	Yes	G	USAR 6	Yes	N/A		Available	10		
Mecklenburg	Yes	Yes	G	Richmond	Yes	Yes	G	Pamlico	Yes	Yes	G	USAR 8	Yes	N/A		COML Status	Total	Avail	Deploy
Mitchell	Yes	Yes	G	Rockingham	Yes	Yes	G	Pasquotank	Yes	Yes	G	USAR 9	Yes	N/A		Available	51		
Polk	Yes	Yes	G	Scotland	Yes	Yes	G	Pender	Yes	Yes	G	USAR 10	Yes	N/A		COMT Status			
Rowan	Yes	Yes	G	Stokes	Yes	Yes	G	Perquimans	Yes	Yes	G	USAR 11	Yes	N/A		Available			
Rutherford	Yes	Yes	G	Surry	Yes	Yes	G	Pitt	Yes	Yes	G					INTD/TERT Status			
Stanly	Yes	Yes	G	Vance	Yes	Yes	G	Robeson	Yes	Yes	G	STR Tower	Avail	Deployed	Radios	Available			
Swain	Yes	Yes	G	Wake	Yes	Yes	G	Sampson	Yes	Yes	G	Tower 1 (SHP)	Yes	N/A	N/A	AUXC Status			
Transylvania	Yes	Yes	G	Warren	Yes	Yes	G	Tyrell	Yes	Yes	G	Tower 2 (SHP)	Yes	N/A	N/A	Available			
Union	Yes	Yes	G	Wilson	Yes	Yes	G	Washington	Yes	Yes	G	Tower 3 (Flatrock)	Yes	N/A	N/A	Military			
Watauga	Yes	Yes	G	Yadkin	Yes	Yes	G	Wayne	Yes	Yes	G	Tower 4 (UASI)	No	N/A	N/A	42nd			
Wilkes	Yes	Yes	G									Tower 5 (NCEM)	No	N/A	N/A	145th AW (			
Yancey	Yes	Yes	G													195th/295th SB (D			



# Where we are headed

- Comms information is inherently geo-spatial (asset here, person there, this area is using Channel 1)
- Current Force Laydown = Easy, for now // We know we need something automated
- Closely tied in with NC SAR Program and their work in Esri (don't reinvent the wheel)
- SC ESF-2 had a ton of great ideas and implementations
- To close out, nice to have for the future!



# Let's Connect!



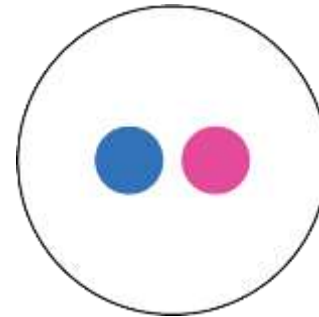
**@NCDIT**  
**@BroadbandIO**  
**@ncicenter**



**NC Department  
of Information  
Technology**



**NCDIT**



**NC DIT**



**@NCDIT**



**FirstTech@nc.gov**



# THANKS!

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[npsfgfoundation.org](http://npsfgfoundation.org)

[@npsfgfoundation](https://www.instagram.com/npsfgfoundation)

