Next Generation 9-1-1 Update
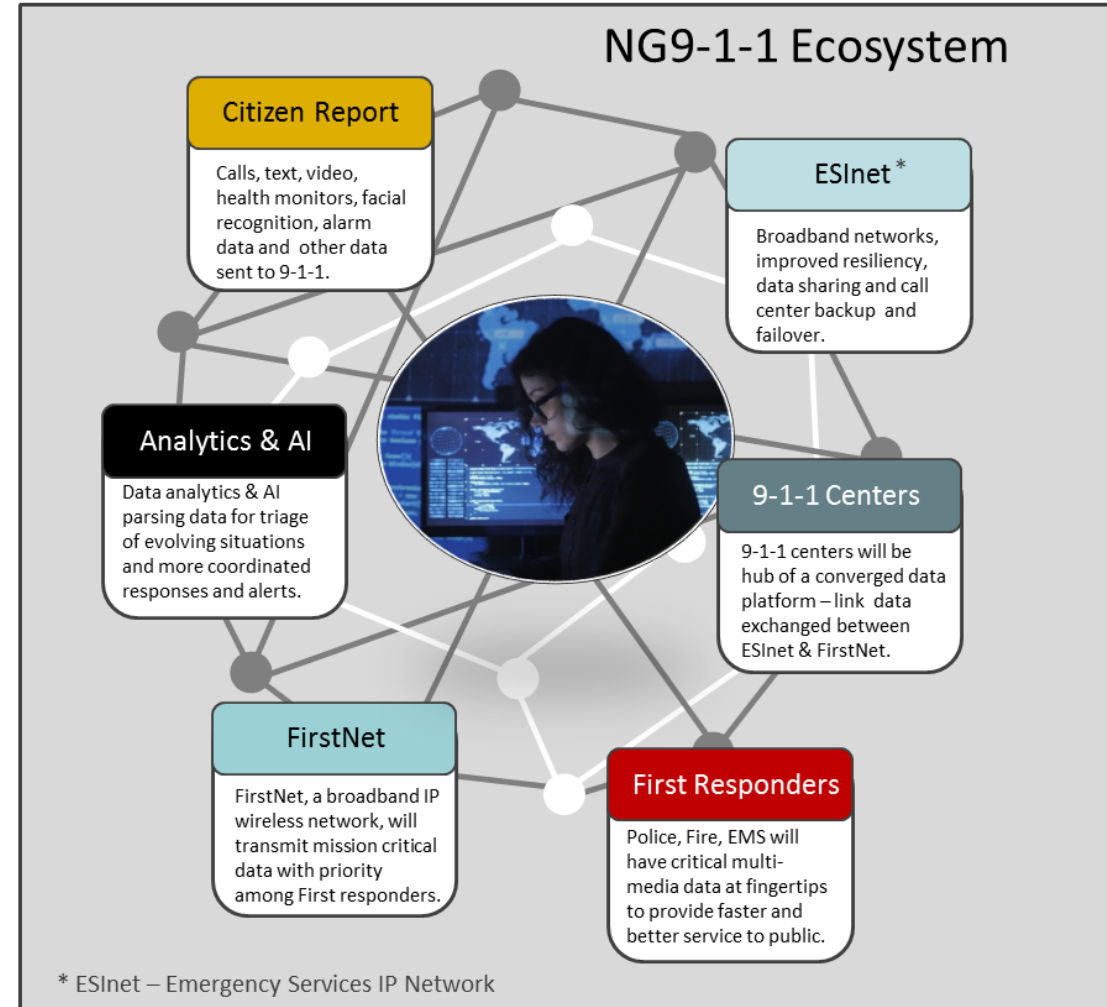
Board of Supervisors IT Committee Meeting
Steve McMurrer, 9-1-1 System Administrator, DPSC
Mike Newburn, Enterprise Voice Communications, DIT

October 9, 2018

Ecosystem of NG9-1-1

- Next Generation 9-1-1 (NG9-1-1):
  - Is a multi-phase, multi-year, multi-jurisdiction effort,
  - Incorporates better use of Smart technology and networks,
  - Improves interoperability between 9-1-1 and First Responder capabilities. ,
  - Leverages the power of converged data.
- Fairfax County is making significant progress but it is still early stages for full realization of all NG9-1-1 benefits.

NG9-1-1 Ecosystem

Citizen Report
Calls, text, video, health monitors, facial recognition, alarm data and other data sent to 9-1-1.

ESInet *
Broadband networks, improved resiliency, data sharing and call center backup and failover.

Analytics & AI
Data analytics & AI parsing data for triage of evolving situations and more coordinated responses and alerts.

9-1-1 Centers
9-1-1 centers will be hub of a converged data platform – link data exchanged between ESInet & FirstNet.

FirstNet
FirstNet, a broadband IP wireless network, will transmit mission critical data with priority among First responders.

First Responders
Police, Fire, EMS will have critical multi-media data at fingertips to provide faster and better service to public.

* ESInet – Emergency Services IP Network

NG9-1-1 is an Ongoing Data Integration Process

Native Telematics Integration

Telematics go beyond cars/trucks and extend to motorcycles or even sports enthusiasts that can reach emergency responders using a mobile app.

Home security systems

Smart home devices connected via IOT detects fires, alarms, or intruder activity and enables homeowner to remotely contact 911.

Wearables/fitness trackers

Devices that contact emergency response if a medical event is detected or a fall. Sends location information directly to 911.
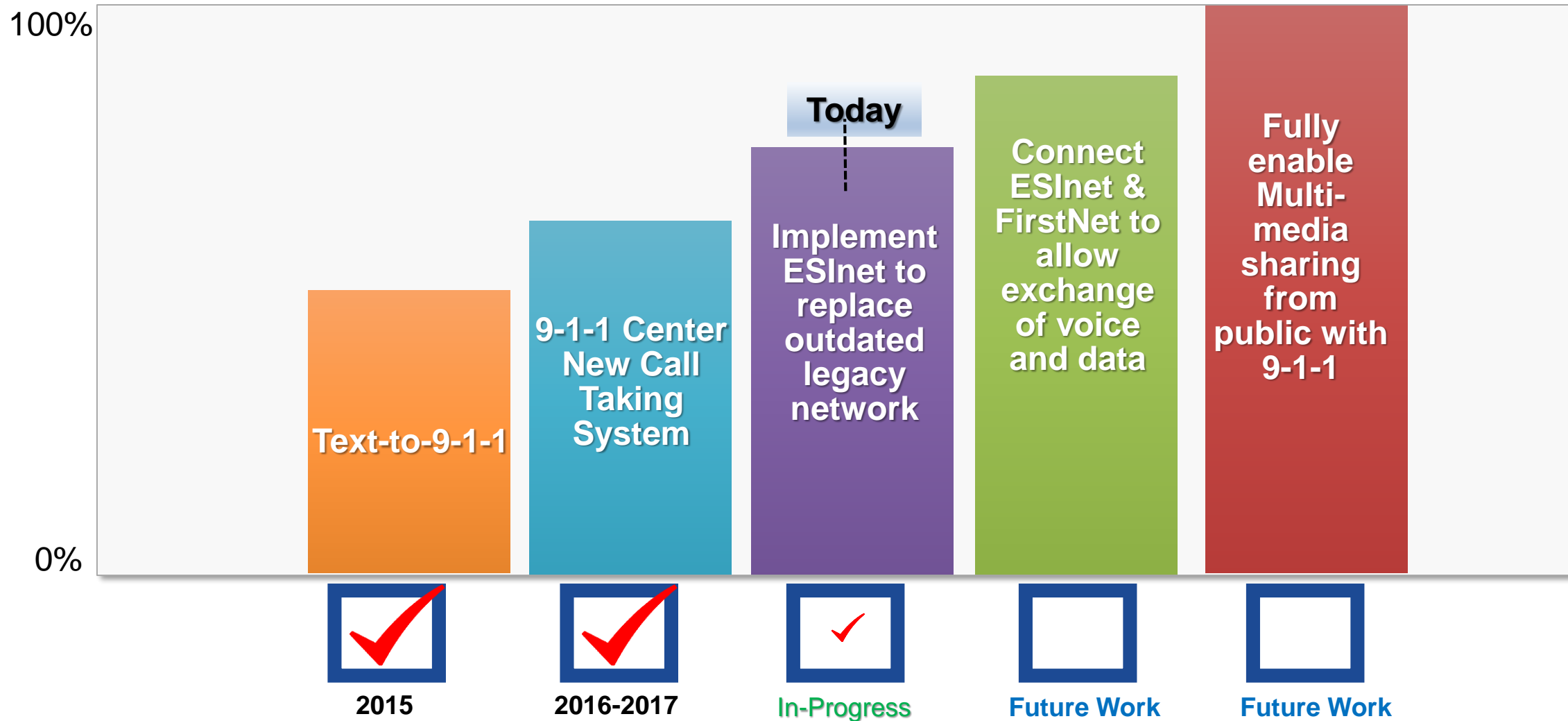
Mobile apps/communication

Mobile data transmits rich data to 911 and integrates with existing systems.

* IOT – Internet of Things

Incremental Steps toward NG9-1-1

Text-to-9-1-1	9-1-1 Center New Call Taking System	Implement ESInet to replace outdated legacy network (Today)	Connect ESInet & FirstNet to allow exchange of voice and data	Fully enable Multi-media sharing from public with 9-1-1
✓ 2015	✓ 2016-2017	✓ In-Progress	Future Work	Future Work

Regional Interoperability

Fairfax NG9-1-1 Effort

- Voice System 9-1-1 Center equipment refresh

- Implemented Text-to-9-1-1 (data)

- ESInet implementation (voice and data on same network)
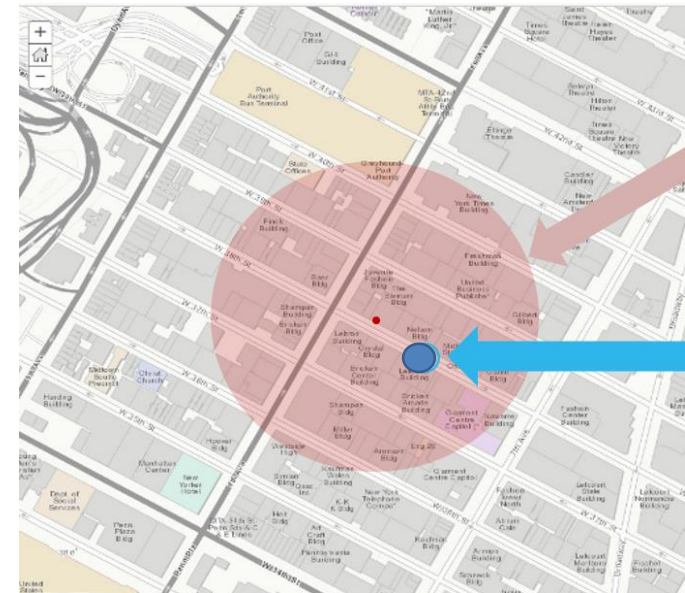
NCR Efforts

- Each jurisdiction has to update new voice system and implement the ESInet

- Fairfax first to establish the ESInet baseline in the NCR

- Most NCR local jurisdictions will be on the ESInet by the 1st Qtr. of 2020

NG9-1-1 Capabilities: RapidSOS NG911 Clearinghouse

What does RapidSOS integration do?

- Allows call taker to locate wireless callers with ***device-based hybrid*** * ***location*** information from <u>enabled</u> smartphones. No app needed by citizen.

- Will also allow access to other data like traffic data and accident data (Waze, Connected Car data, etc.)

* "enabled" refers to phones with iOS 12 and Android devices/smartphones

WPH2 Location
(Traditional cell tower triangulation, larger circle of uncertainty)

RapidSOS Location

(IPhone and Android device location, improved accuracy, smaller circle of uncertainty)

Much Improved "Location, Location, Location" for Wireless Calls

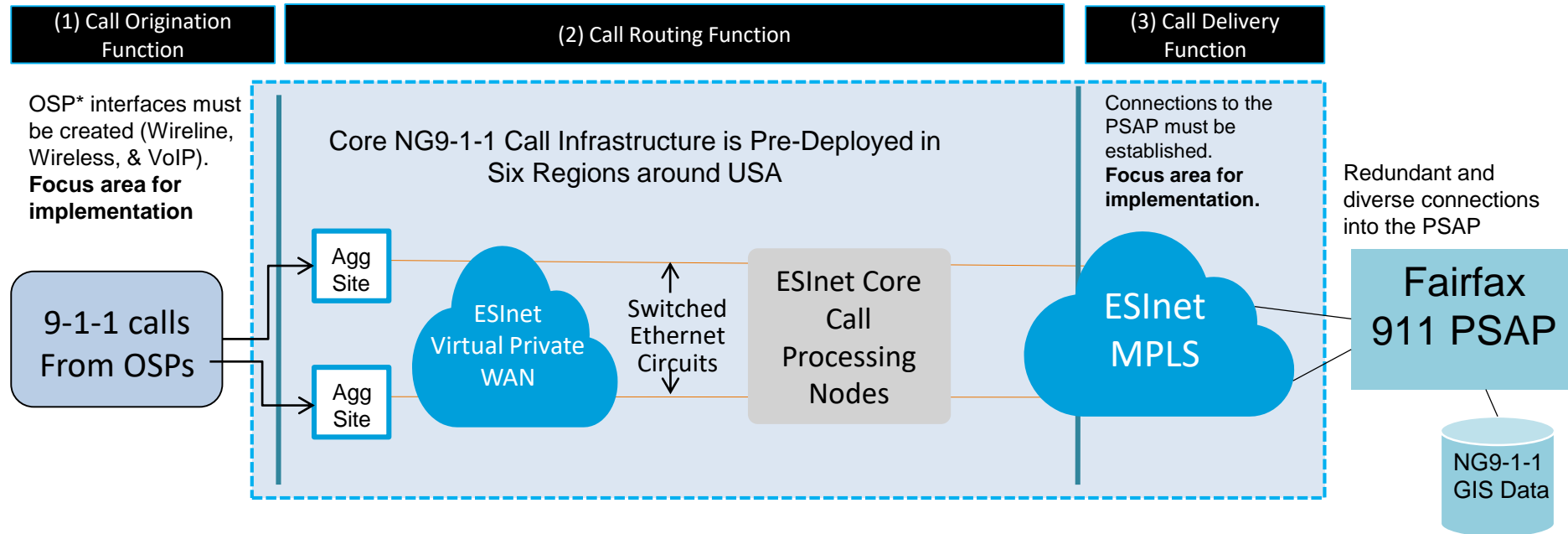# Example Screenshot from RapidSOS NG9-1-1 Integration

Traditional cell tower triangulation puts caller across street blocks away from PSTOC building.

RapidSOS device location puts the caller inside the PSTOC building.
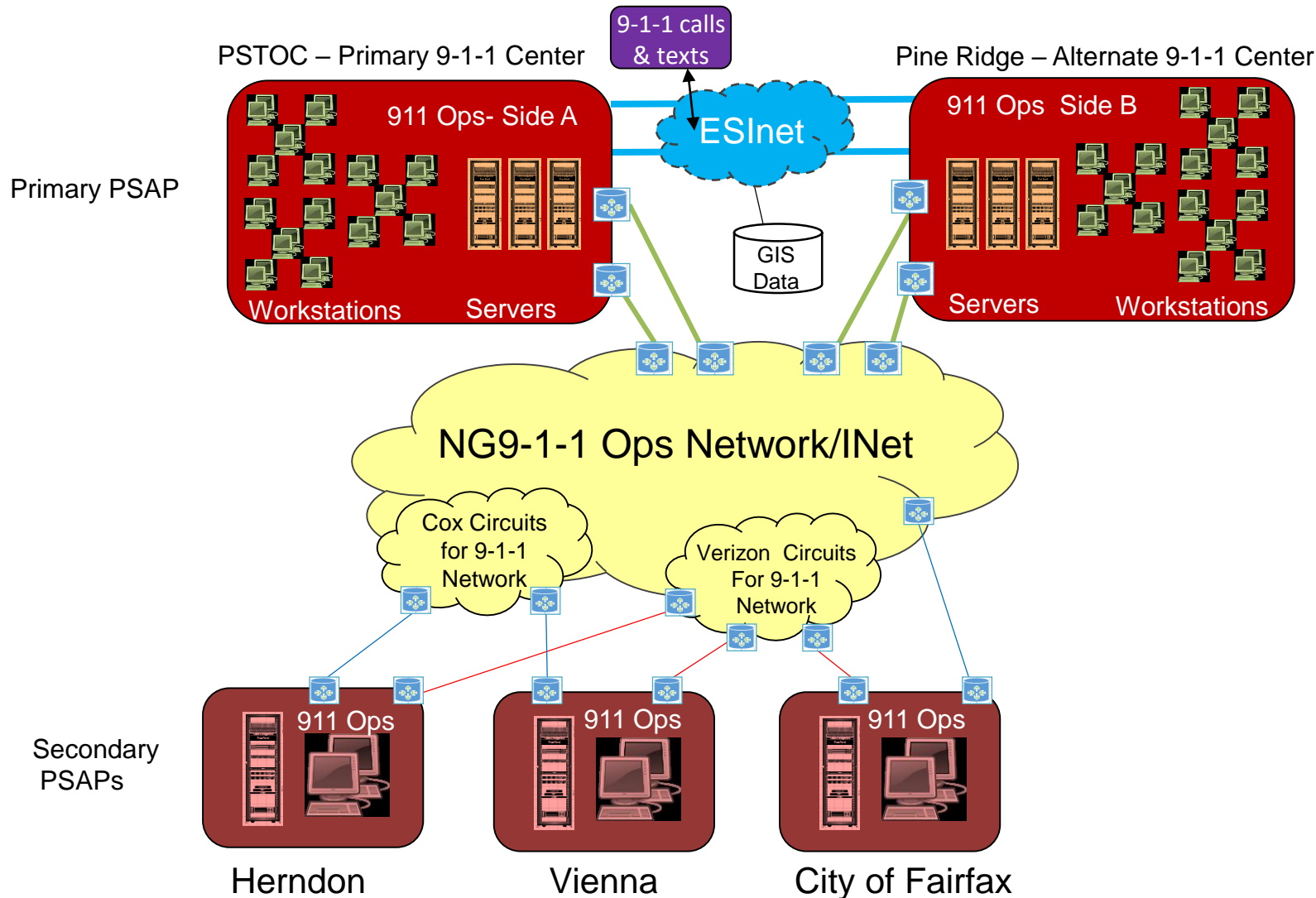
Industry Platform – ESInet

AT&T ESInet^{TM} is a Call Routing service – three main functions

(1) Call Origination Function	(2) Call Routing Function	(3) Call Delivery Function

OSP* interfaces must be created (Wireline, Wireless, & VoIP). **Focus area for implementation**

Core NG9-1-1 Call Infrastructure is Pre-Deployed in Six Regions around USA

Connections to the PSAP must be established. **Focus area for implementation.**

Redundant and diverse connections into the PSAP

9-1-1 calls From OSPs

Agg Site

Agg Site

ESInet Virtual Private WAN

Switched Ethernet Circuits

ESInet Core Call Processing Nodes

ESInet MPLS

Fairfax 911 PSAP

NG9-1-1 GIS Data

- OSP = Originating Service Providers (e.g., T-Mobile, Sprint, Verizon Wireless, AT&T Wireless, Cox, Vonage, etc.)
- Aggregation (Agg) Site = Local AT&T secure data centers which collect calls from OSPs and pass into the ESInet.
- Core Processing Nodes = Six NG9-1-1 core services processing centers, geographically dispersed across USA (for resiliency), and provide multiple layers of online redundancy.

Fairfax's NG9-1-1 Telephony Platform

- **Five Locations:** new system and improved network communications
- **Largest deployment in Virginia** and tenth largest in USA
- **Multiple Redundancies:** improved survivability
- **Legacy to ESInet Transition**
- **Establishes foundation:** increase data exchange between 9-1-1 and First Responders in the field

CAD Improvements

Fairfax County's CAD

- Keeping our CAD Updated with software and equipment refreshes

- When appropriate time comes will look at a refresh (3-5 years)

- Future CAD will bring more integration of open source data and software integration

NCR CAD2CAD Data Exchange Hub

- Developed by DIT for NoVa Fire Chiefs

- Has reduced response times for mutual aid events by minutes

- Additional jurisdictions in region continue to join per governance plan

NCR ICI
NATIONAL CAPITAL REGION
INTEROPERABLE COMMUNICATIONS INFRASTRUCTURE

Future opportunity for shared services CAD once industry has NG ready systems & cost that reduce reliance on heavy IT infrastructure.

Achieve Data Integration with FirstNet™

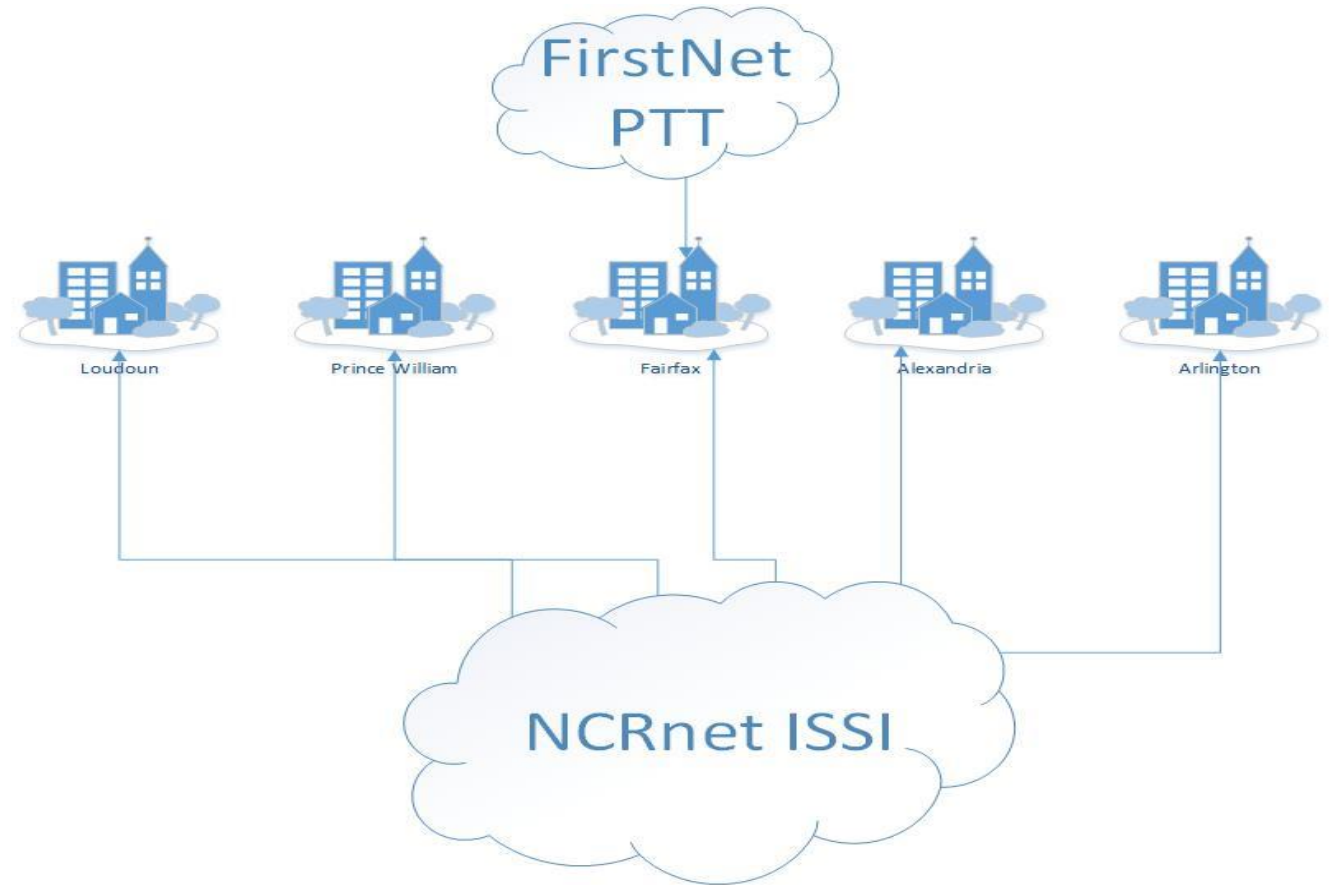# Public Safety Radio System Integration
Inter-RF Subsystem Interface (ISSI)

- Multiple Public Safety radio systems to connect and form a larger area-wide network

- Connects Fairfax County public safety radios to FirstNet

- Connects the WMATA's underground radio system to local first responder radio networks

- Invaluable tool for the NCR for interoperable communications during emergency response across boarders

NOVA ISSI Today

As NG9-1-1 integrates voice and data, radio systems are able to be interconnected

Future National Capital Region (NCR) ISSI Network

Next Generation 9-1-1 Update

Next Generation 9-1-1 Update