



APCO Application Testing at Texas A&M University Internet2 Technology Evaluation Center (ITEC)

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- ITEC History
- NG 9-1-1 Activities
- Public Safety Broadband
 - Harris County
 - General Dynamics
 - Application Testing Sandbox
- Interop Events
 - Winter Institute
 - NIE 15.1
 - CAUSE 3



- Created 2014
- NTIA TOP NG 9-1-1 grant – TAMU and Columbia University 2005
- US DoT NG 9-1-1 Proof of Concept TAMU Columbia and others 2007
- NENA ICE 2009
- NSF NG 9-1-1 Testbed 2009
- Harris County LTE deployment begins 2010
- Internet2 US UCAN 2010
- Internet2 SIP in the Cloud 2012
- ITEC begins EDGE collaboration with Dr. Murphy 2012
- FirstNet Board visits Texas A&M University Jan 2013



- TAMU signs MOU with Harris County
- EPC installed at Hensel Park
- EnodeBs installed at Kyle Field
- Ongoing work to connect Arlington, Texas and the State on New Mexico
- Support Harris County on DHS Border Control Demo
- Met with FirstNet staff in April of 2014 re Application Testing Sandbox
- Connecting PSCR under CRADA
- Connecting Regina University
- Talks ongoing with University of Central Florida

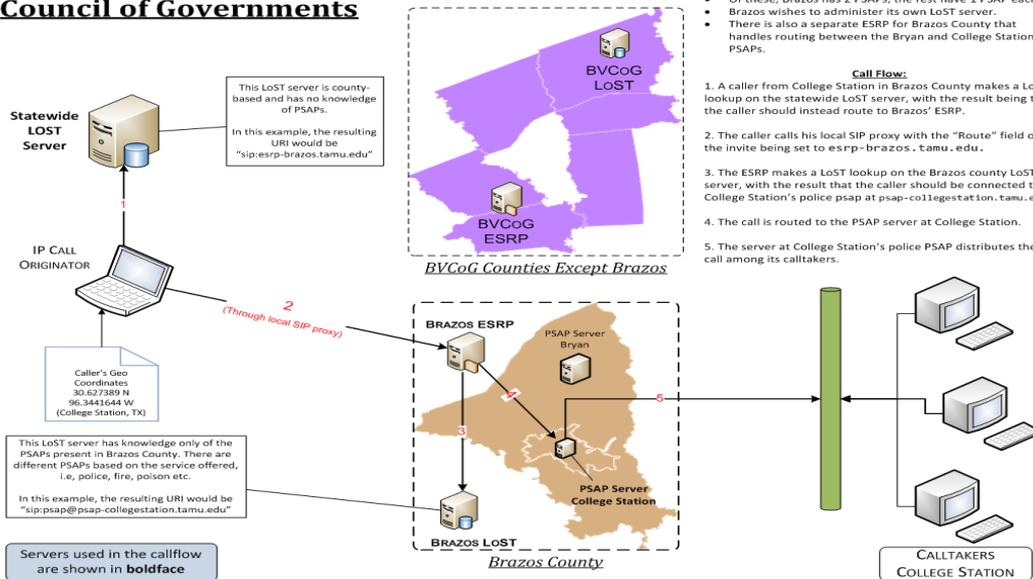


NG 9-1-1 Activities

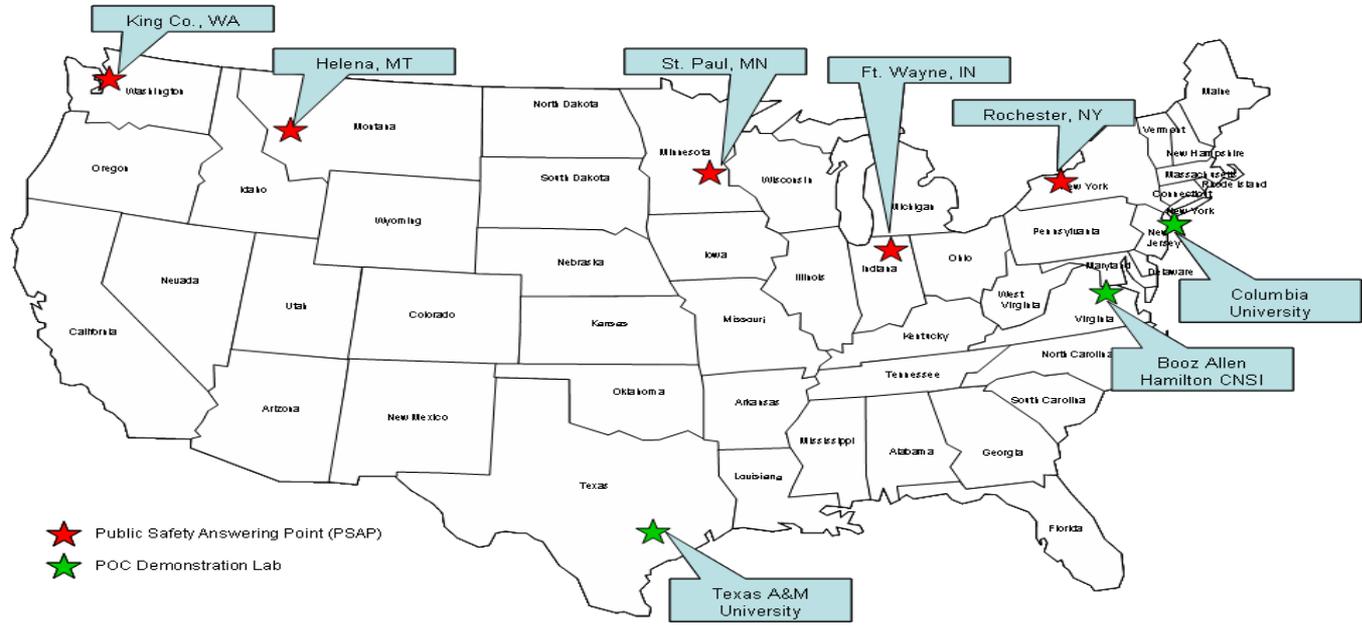
- US DoT Proof of Concept 2007-2009
- Booz Allen Hamilton lead
 - Texas A&M and Columbia to build and deploy functional elements

Texas CSEC LoST Implementation

Example Setup for the Brazos Valley Council of Governments



Proof of Concept Participants





- 2010 – Contract with Harris County – First Band 14 network in United States. EPC installed at TAMU campus
- 2012 – General Dynamics EPC installed in ITEC Lab
- 2013 – Supported DHS Border Patrol demonstration project in McAllen Texas
- 2013 – Winter Institute
- 2013 – CRADA signed with NTIA's PSCR



Other National
Public

Safety
OIC/TXD
PS

Austin RPG
San Antonio

- EPC=** Evolved Packet Core
- RPG=** Remote Packet Gateway
- LMR=** Land Mobile Radio
- eNB=** eNodeB -Cell Site
- LEARN=** Lonestar Education And **Research** Network
- USUCAN=** United States Unified Community Anchor Network
- NOC=** Network Operations Center
- OIC=** Operations Intelligence Center (NOC)

Conceptual

EPC
Location: College
Station, TX

LMR

Verizon
National
Network

National Clearing
House
**NOC Harris
County**

Harris
County RPG

Location: TxDPS
Region 2 HQ
Houston, TX

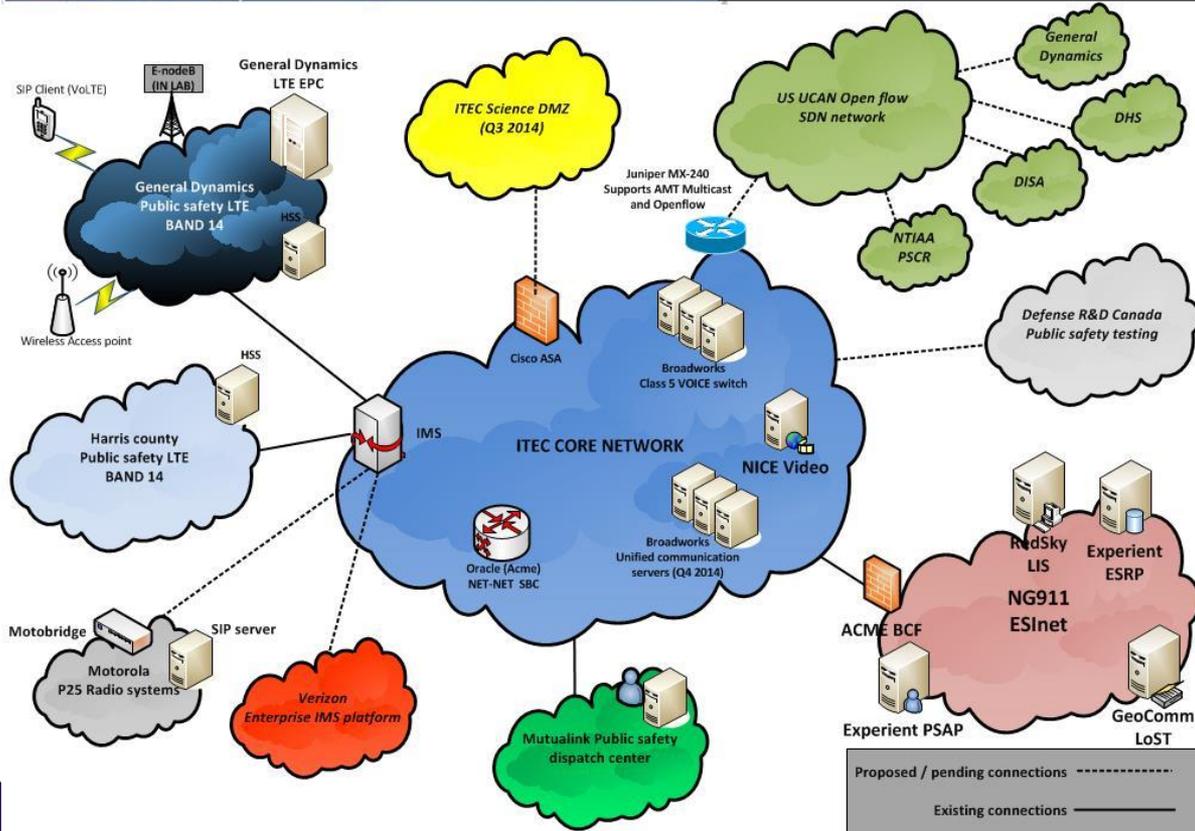
- Partners:**
- Harris County
 - Texas Department of Public Safety
 - City of Baytown
 - Texas A&M



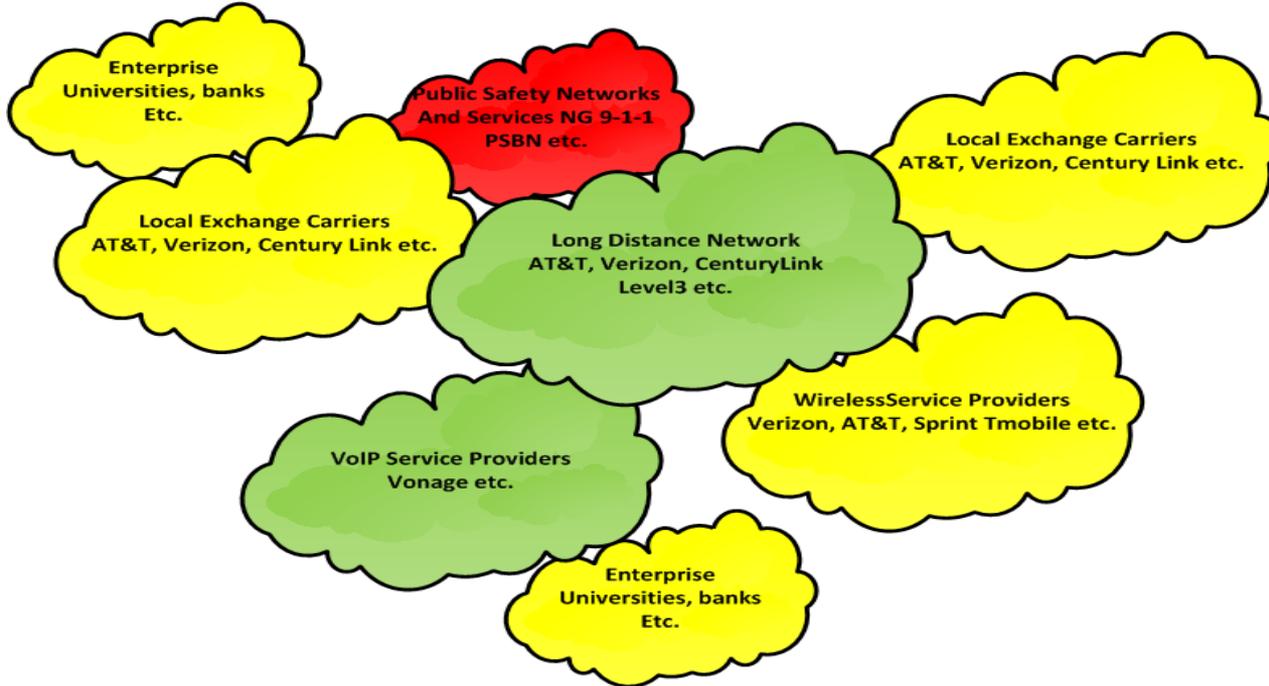
Public Safety Broadband

Applications Testing Sandbox

- Met with FirstNet staff in April of 2014 re: Application Testing Sandbox
- Connecting PSCR under CRADA
- Connecting to Regina University
- Connecting with Centre for Security Science, Defense R&D Canada



SIP Adoption – A look at the Ecosystem





Interop Events

- Winter Institute TAMU - College Station October 28 & 29
- United States Army NIE 15.1 – Fort Bliss, El Paso Texas October 28 & 29
- Canada CAUSE 3 – November 26 & 27 – South Saskatchewan



Exercise Overview

Ft Bliss,
Texas

College Station
Texas

Ft Bliss/
GDC4S EDGE Facility

WIN-T
B-LOS



TAMU
TEEX

P25
TIGER
GeoSuite

LTE
eNodeB



NIE 15.1

Geo Suite



CPN/JNN 86th ESB

JBC-P/TIGR

UTEP
US-UCAN
Fiber

EI
Paso,
Texas

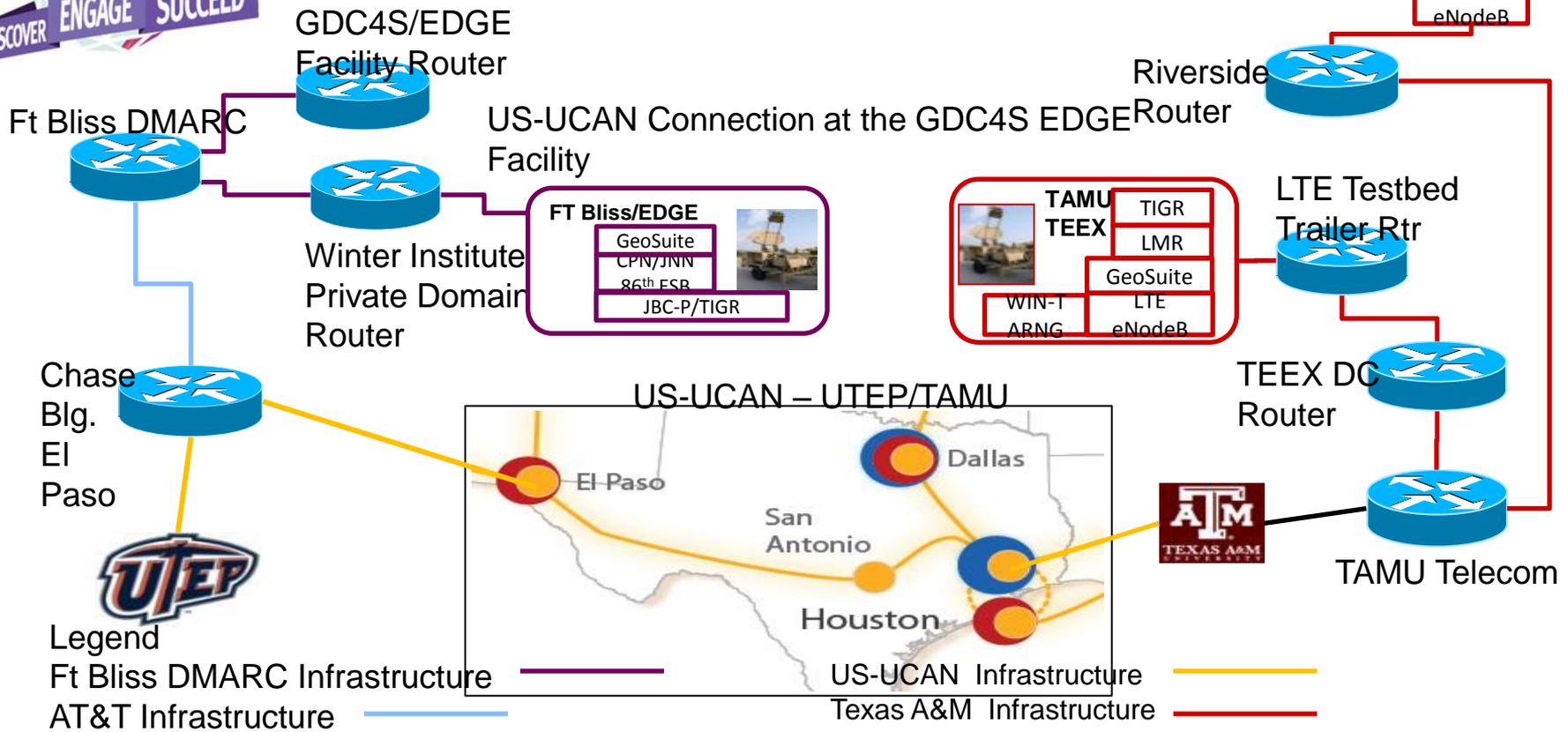
GeoSuite

Sharepoint

Liaison/Joint Agencies

- JTF NOR
- UTEP
- NMARNG
- TMF/T-DEM
- HRF
- DHS







Interoperability Objectives for NIE 15.1

1. Evaluate the compatibility of TIGR and GEOSuite to produce a common operating picture (COP).
2. Evaluate the use of the US-UCAN fiber optic system to support DSCA missions.
3. Evaluate interoperability between TXARNG and OPFOR/86 ESB using WIN-T Inc 1b.
4. Evaluate the use of Unmanned Aircraft Systems (UAS) to support DSCA missions.



US UCAN

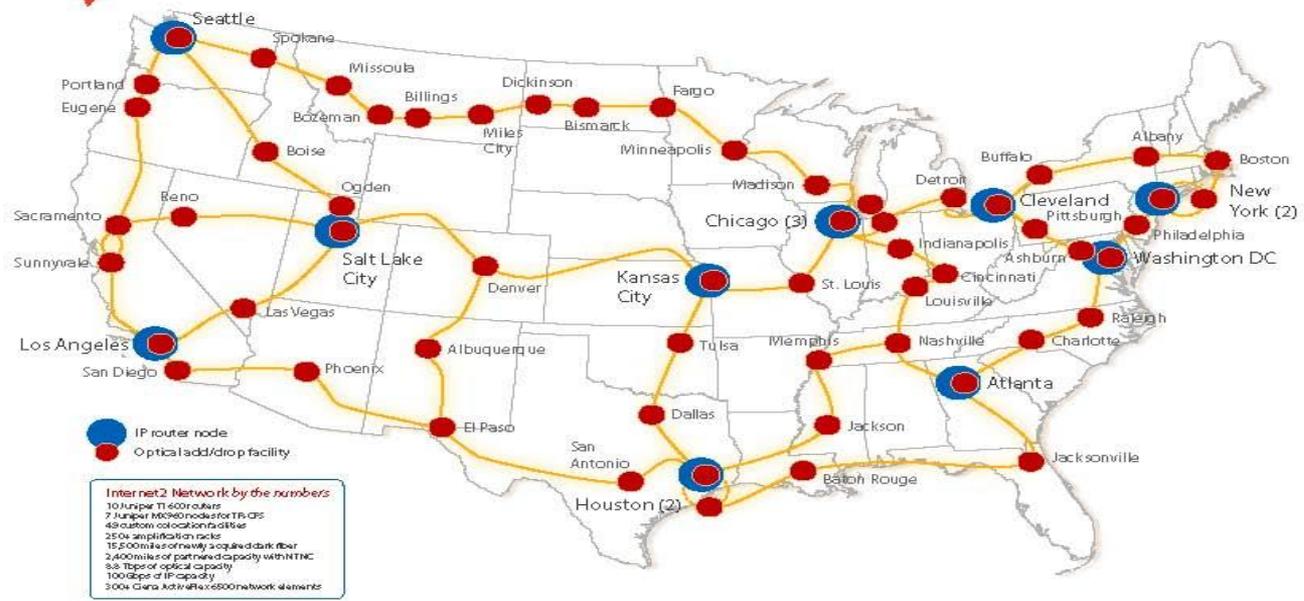
- Internet2 \$96 million project to build a national backbone
- NTIA AARA funded BTOP grant
- Built on Ciena DWDM transmission system (88 x 100 gigabit per second waves.
- In third year of two contracts for ITEC to serve as Public Safety Advocate



US UCAN



Internet2 Planned 100 Gigabit Infrastructure Topology (DRAFT)
Draft - Last updated 04/10/11



IN SUPPORT OF
U.S. UCAN

NETWORK PARTNERS





- AASTRA
- Acme Packet
- Avaya
- Broadsoft
- General Dynamics
- Juniper
- Experient
- NICE
- RedSky
- GeoComm
- Mutalink
- Polycom
- Rave





IMS - Bridging the Gap

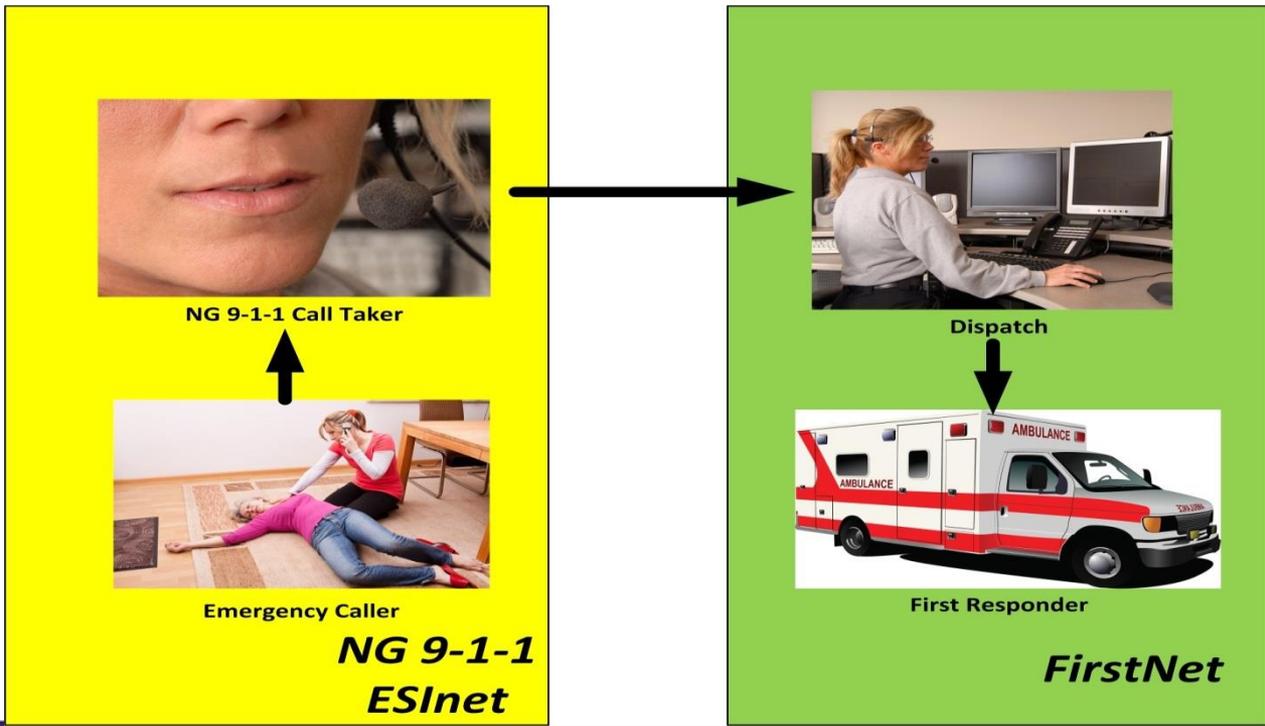
- IP Multimedia Subsystem (IMS) used to connect networks
- Stated Direction of FirstNet, NPSTC and Carriers
- Allows for cross network authentication and QoS packet markings
- Is built on SIP (basis of NENA i3)
- Required to make this work
 - IMS Core – ACME Packet SMX 3820 in place
 - ENUM Structure
 - E.164 assignments for all first responders
 - SIP Clients for LTE devices (Broadworks UC Clients)



TAMU ITEC, a place to go to test Applications

- Applications either under test or proposed
 - Situational Awareness – General Dynamics GeoSuite
 - Surveillance Video – NICE
 - P25 PTT integration - Motorola
 - Multicast video – Juniper
 - Autonomous Unmanned Vehicles – AirRobot
 - Multijurisdictional information sharing - Mutual Link
 - Linear video - Philo

ITEC Vision





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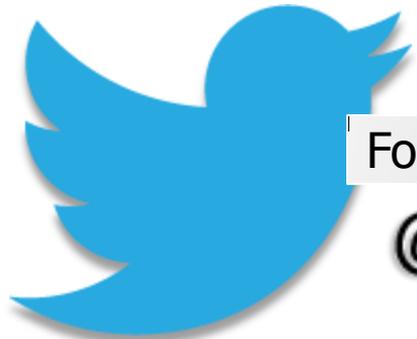
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