



NEXT GENERATION 9-1-1...


HALFWAY TO THE WALL SYNDROME

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What is NG9-1-1 and Why Should We Care?

Today we will cover:

- Current State of 9-1-1
- Limitations of 9-1-1 Today
- What is Next Generation 9-1-1?
- Why do we need Next Generation 9-1-1?
- Is NG-9-1-1 deployable **TODAY**?
- What can we expect with Next Generation 9-1-1?

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NENA Next Generation Partner Program

The NENA Next Generation Partner Program was established to work, in parallel with Technical and Operations development, on NG 9-1-1 and NG emergency communications enabling issues.





It's Not Just 9-1-1 Anymore!

- With technology available today – we are moving to an Emergency Services System environment.
- We will be sharing networks, bandwidth and data.
- Need to foster partnerships and leverage what we can do for one another.
- Policies & SOPs need to be developed



Why are there problems getting to NG-9-1-1.....

- Mathematically: Any distance divided by 2 so you never reach the goal
- Business Definition: Always waiting for the other guy to take the chance, Legacy agency that is in control and has no desire to move forward now...
- Public Safety Industry Vendor Definition: Of course I am fully NG-9-1-1 compliant; no you will not have to forklift the CPE-----TRUST ME!!...
- SOME Local/State/Federal Governments Definition: I am safe with a Legacy system, I will wait and watch. We want the best new systems but since there is not a TRUE NENA standard developed yet, we will wait...Remember, we must finish our NG-9-1-1 Initiative review...maybe next fiscal year...maybe I need to wait for another round of grants.

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E9-1-1 Current Requirements

- **Wireline**
 - -No federal requirements
 - -Some state and local requirements
 - -Voluntary industry implementation

- **Wireless**
 - -Federal (FCC) requirements (Docket 94-102)

- **Multi-Line Telephones Systems (MLTS)**
 - -No federal requirements
 - some states have requirements

- **VoIP**
 - -Federal (FCC) requirements (Docket 05-196, 04-36)

- **ADA requirements for TTY**
 - Currently no provisions for Video/IP relay services, text messaging



What We Have Now. . .

Different Levels of Service

- **Wireline**
 - Most Reliable Location Technology
 - Selectively Routed to Correct Answering Point
 - Provides Call Back Number and Address

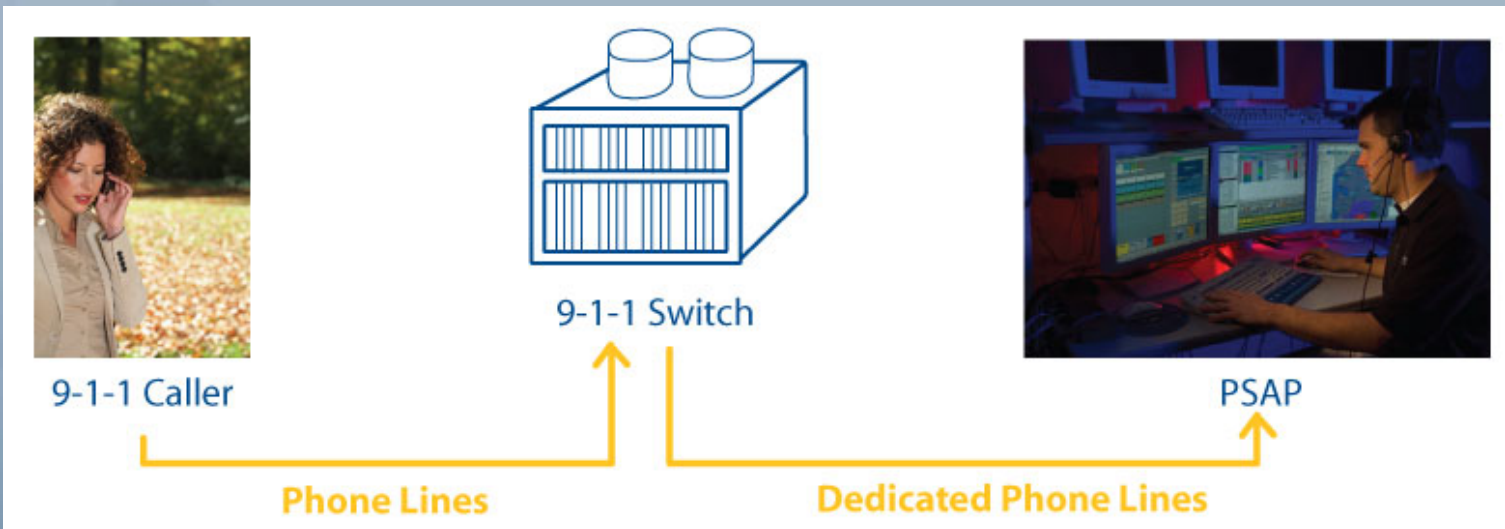
- **Wireless Phase I**
 - Provides Call Back Number
 - Provides Carrier Info and Tower Location

- **Wireless Phase II**
 - Provides Call Back Number
 - Carrier Info & Tower Location
 - Approximate Location based on X & Y Coordinates
 - Accuracy Requirements vary by technology used, and are under review by the FCC
 - 73% of Counties Covered – 91.5% of Population

- **VoIP**
 - IP calls to geographically appropriate PSAP using existing 9-1-1 network
 - Provides Call Back Number and sometimes---Registered Address



Legacy 9-1-1





Next Generation 9-1-1 **Vision**

An evolved, fully-functional, Next Generation 9-1-1 system that is accessible **anytime, anywhere, from any device.**





Why Do We Need NG9-1-1?

- The old E9-1-1 system design just can't cope
 - New communications technologies need 'plug and play' access and interfaces, IP capabilities
 - Constant adaptation of E9-1-1 expensive and slow
 - Growing data rich environment – E9-1-1 can't handle
 - Need data bandwidth, modernized network --> IP
 - Need nationwide and beyond intercommunication, including other emergency services
 - Post transition, NG9-1-1 can be significantly more efficient (and likely less expensive for similar features)

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What is NG9-1-1?

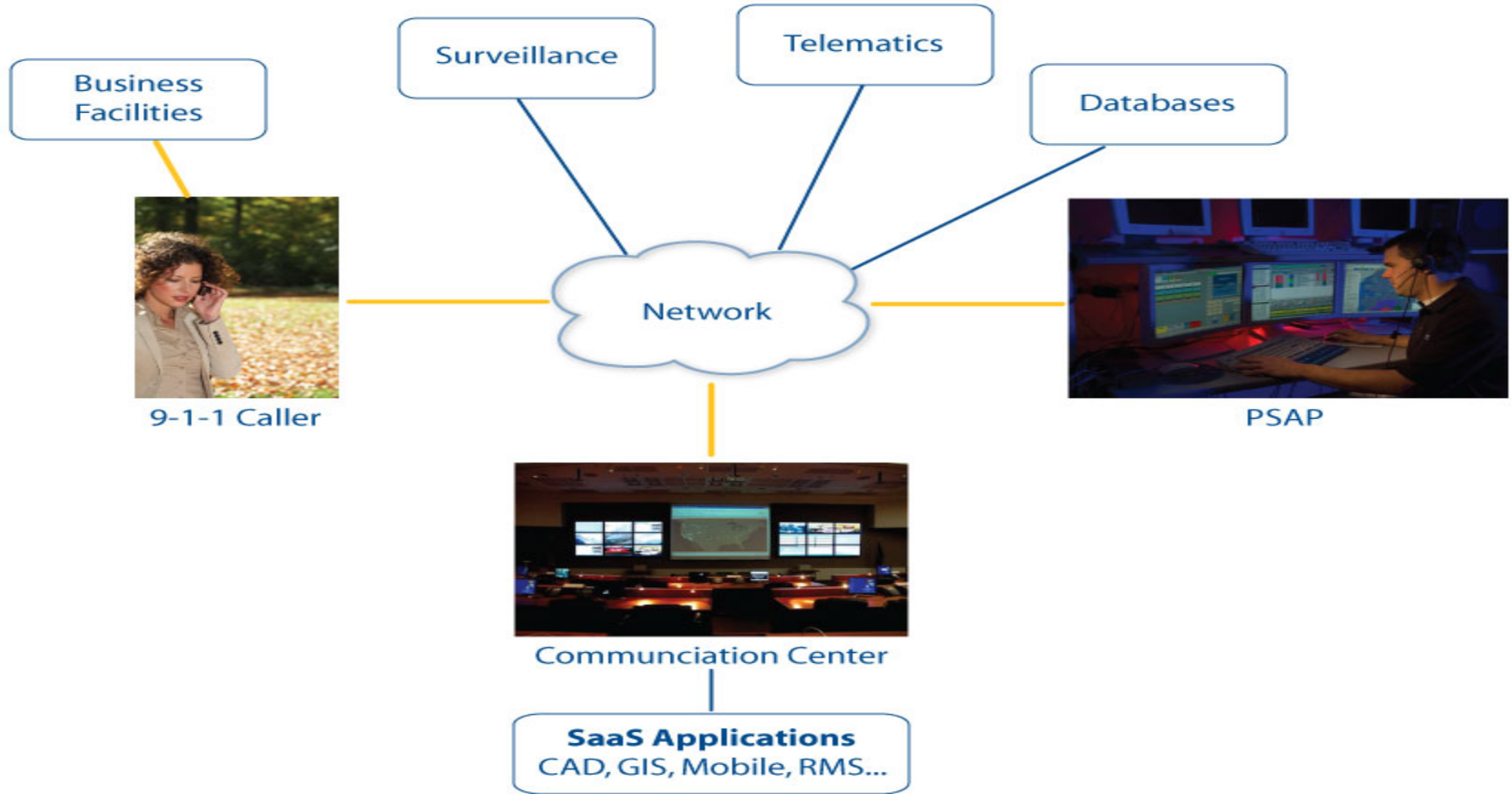
- An IP-Based Replacement for E9-1-1 System Features and Functions
- Operating on Private or State Managed, Multipurpose IP Networks
- Providing Expanded Multimedia Data Capabilities for PSAPs and Other Emergency Communications Entities



What is NG9-1-1, cont'd?

- NENA standard i2.5 and soon to be published i3.0
- GEO-Spatial Routing
- Complete Enhanced Wireless with SMS or IM messaging and reverse notification on cellular networks
- Video, Biometrics, Telemetrics and alarm inputs

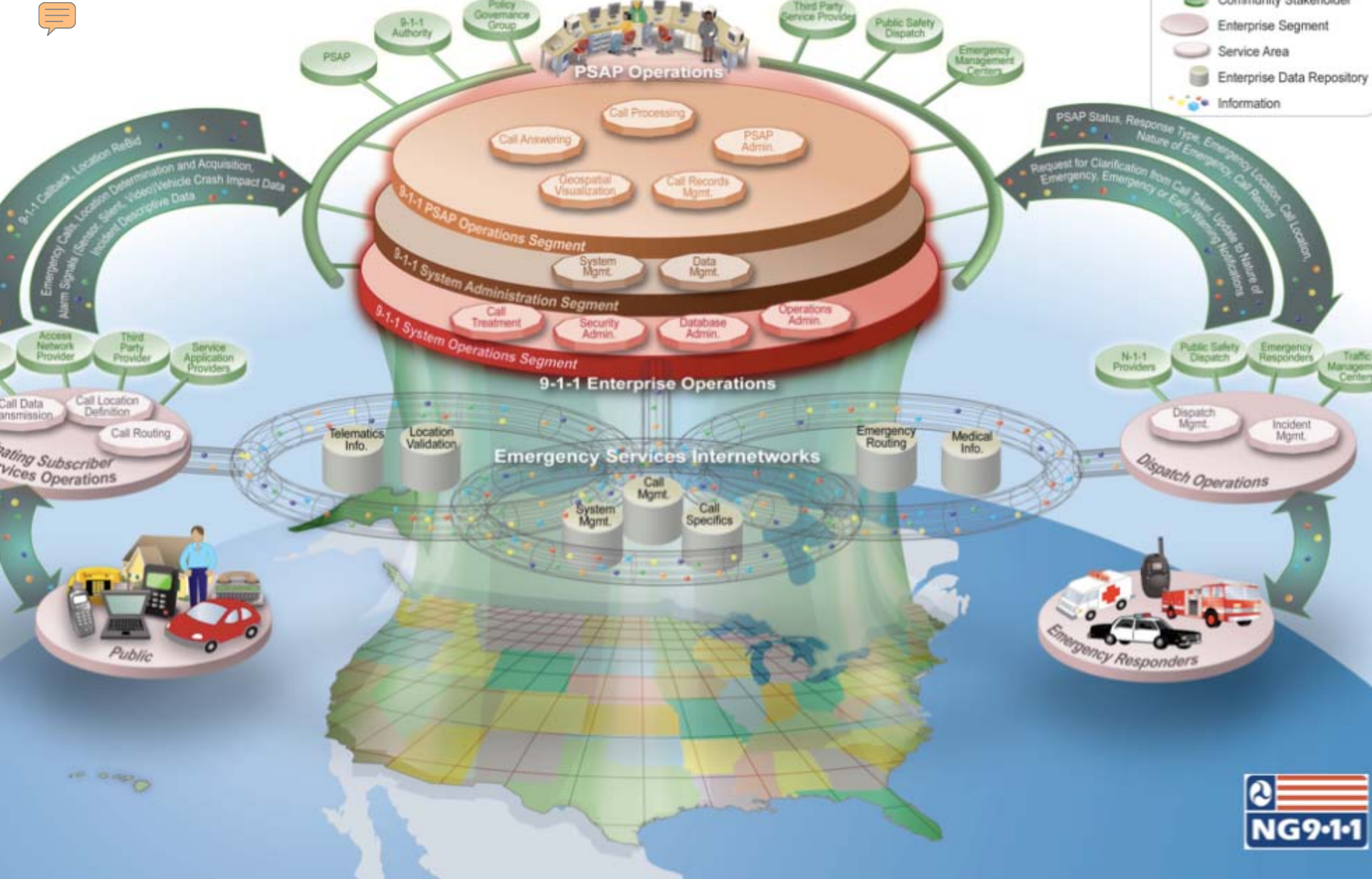
NG-9-1-1 OPERATIONS





THE U.S. "D.O.T." MODEL

- GEOGRAPHIC BASELINE
- EMERGENCY SERVICES INTERNETWORKS
- DISPATCH OPERATIONS
- ORIGINATING SUBSCRIBER SERVICES
- 9-1-1 ENTERPRISE OPERATIONS
- PSAP OPERATIONS





Geographic Baseline Layer



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Emergency Services Internetwork

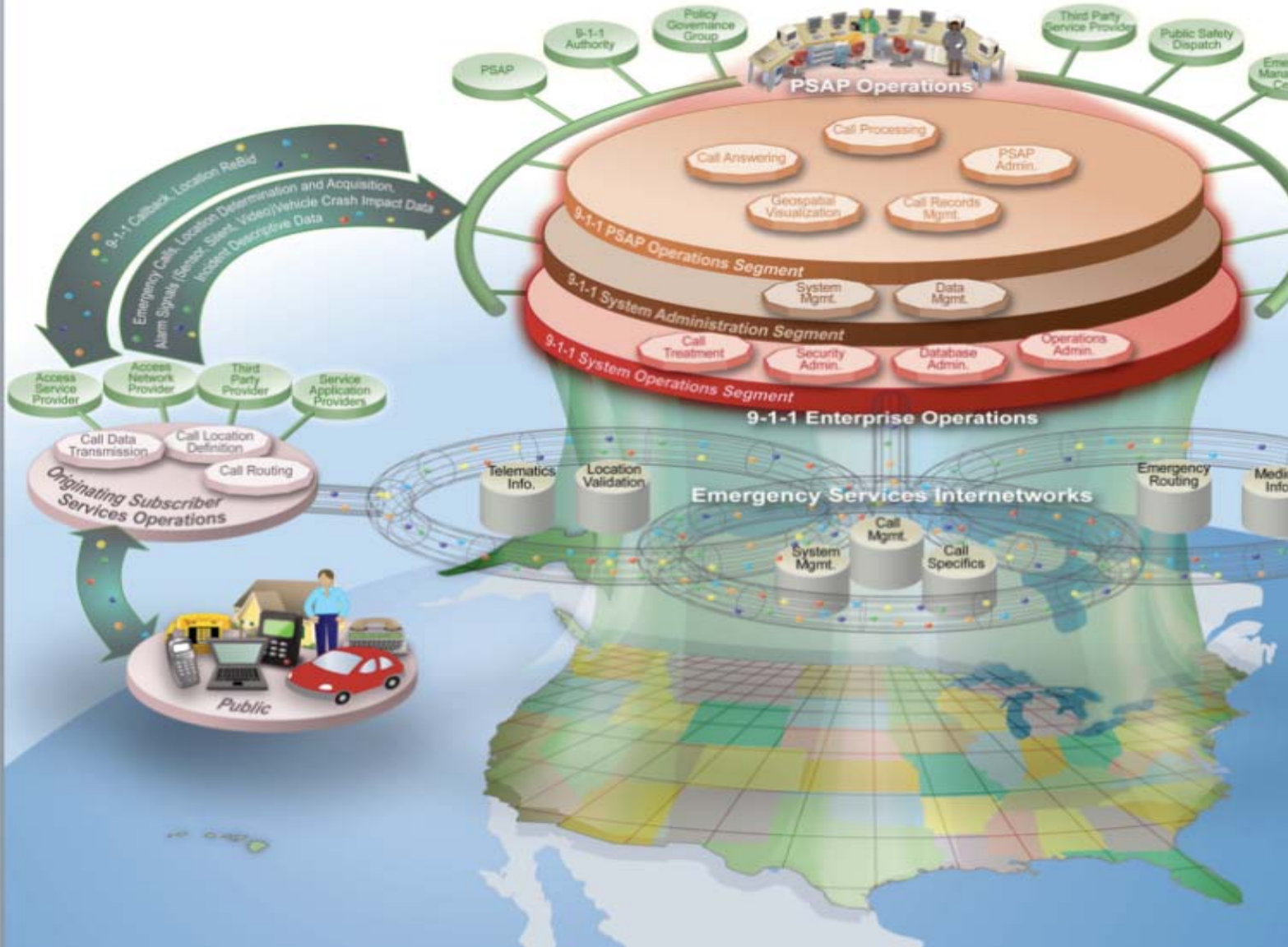




Dispatch Layer

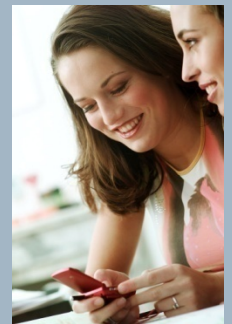
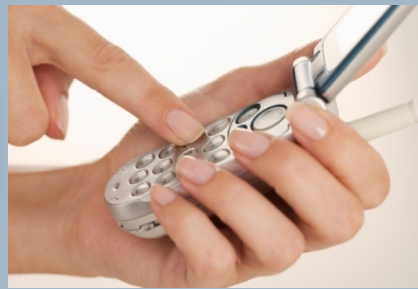


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NG-9-1-1 Motto



ANY DEVICE, ANY TIME,
ANYWHERE!





Any Device

All current call sources, and new ones:

Person Initiated Examples:

- Video or Photo from Cell Phone
- Text Messaging/Instant Messaging

Non-Person Initiated Examples:

- Highway Cameras/Security Cameras
- Alarms
- Sensors
- Personal Medical Devices
- Telematics
- Consumer Electronics in Cars



Any Time

- Interoperability
- Disaster Planning
- Special Events Call Management
- Overflow and Alternate Routing
- Rights Management
- Data Management



Anywhere

- Location Determination
 - Civic address, IP address and X,Y (Z?)
- IP-based or compatible devices will send their location as part of the emergency call or text message.
- Passing Info to First Responders
- Virtual PSAP
 - Dynamic Staffing
 - Disaster Call Management



PSAP Needs Drive NG9-1-1

- NG9-1-1 will use hardware and network that are not 9-1-1 specific
 - E9-1-1 uses E9-1-1 specific hardware/software and network
- NG9-1-1 is software driven, and controlled by databases
- NG9-1-1 must route calls/messages based on multiple factors
 - E9-1-1 routes primarily on address/location



PSAP Needs Drive NG9-1-1

- NG9-1-1 will handle many more types of devices
 - Voice, text, images, data only (such as sensors)
 - Routing and control functions will support more than just 9-1-1, such as N-1-1s and others, over a common network
- NG9-1-1 functions can/will route to emergency entities other than PSAPs, including 211, 311, N11 centers, and allow transfer between them all
- Supports Virtual PSAPs (distributed calltakers)



IP Networks Supporting NG-9-1-1 (ESInets)

- Use IP networks as they develop (9-1-1 or other existing public safety network)
- Linked together as a network of networks, nationally and beyond
- NG9-1-1 functions run on the IP networks and must meet NG-9-1-1 **NENA i3.0** standards
- Expanded data access with wide area/national emergency communications capabilities



Why is it Time for NG9-1-1?

- Resolving Infrastructure Limitations
- Equal Access for Hearing Impaired
- More Functionality
- Fast Data Sharing with PSAPs, and other emergency service providers & responders
- Need for National and International Interoperability
- Interoperability with N11s and 800#s
- ANY DEVICE, ANY TIME, ANYWHERE. . .

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What Can We Expect?

Basic Objectives for NG-9-1-1

- 9-1-1 calls from any networked communication device, with automatic location
- Call access, transfer, and backup among PSAPs and between PSAPs and other authorized emergency organizations without geographic restrictions
- Open, non-proprietary, and secure architecture to facilitate the implementation of an interoperable system of systems for **all emergency organizations**



Major Issues for NG-9-1-1 Migration and Implementation

- Funding, Standards and Technology development
- PSAP/Emergency response operational modifications
- Wide-ranging education needs
- Regulation & Legislative changes



Example Activity Toward NG-9-1-1

- USDOT Project Sites
 - Three Labs, national IP network, Five PSAPs, One state IP network
 - Rochester, St Paul, Helena, Seattle,
 - Indiana IP network and Ft Wayne PSAP
- State Programs – VT, IN, TN, AL, MD
- Strategic Plans in many other U.S. states



USDOT NG9-1-1 Project



- Two Year Project (2007-2008)
- Prepare for and Conduct a 6 month 'Proof of Concept' Trial (mid-2008)
- Develop and Validate Core Requirements for the Next Generation 9-1-1 (NG9-1-1) System
- Define a System Architecture
- Develop a Transition Plan for Deploying IP-Based Emergency Services Across America.
- Booz Allen Hamilton, prime contractor
 - Project Team: NENA, L Robert Kimball Associates, Texas A&M University

Info at: www.its.dot.gov/ng911



USDOT NG9-1-1 Project

Long Term Goal:

- R&D to design a system that enables the transmission of voice, data or video from different types of communication devices to the Public Safety Answering Points (PSAPs) and on to emergency responder networks.



Major Milestones: to be accomplished during this two year project

- National Architecture and High-Level Design for NG9-1-1 System
- Proof of Concept
- Transition Issues for NG9-1-1 Implementation



Stakeholders in Transition

- General public – emergency callers
- 9-1-1 Authorities/State 9-1-1 agencies
- Local PSAPs and other emergency response agencies
- Public safety and industry organizations – APCO, NENA, CTIA, etc.
- Standards Development Organizations
- 9-1-1 System Service Providers (ILECs)
- Originating Service Providers and national call centers (telematics, TRS, VRS, other N-1-1s, etc.)
- Vendors, Equipment Manufacturers and distributors

This will require significant cooperation!



Working Together To Make NG-9-1-1 A Reality

- Understand that underlying network/technology needed for NG-9-1-1 is also needed for ALL emergency communications (high bandwidth voice, data, video)
- Promote policies that jointly support 9-1-1 and emergency communications as one “emergency response enterprise”
- Encourage federal and state homeland security policy to include NG9-1-1/emergency communications
- Help/encourage coordination of all efforts and stakeholders within states
- Facilitate/participate in NG9-1-1 development and trials



Working Together To Make NG-9-1-1 A Reality

■ Education:

Promote NG9-1-1 within membership of public safety and local-federal government organizations

- Publications and meetings

- Regional NG-9-1-1 meetings for input to STATE Board meetings



HAS NG-911 BEEN DEPLOYED TO DATE IN
THE UNITED STATES??

YES...

WHERE...

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Geo-Spatial Routing



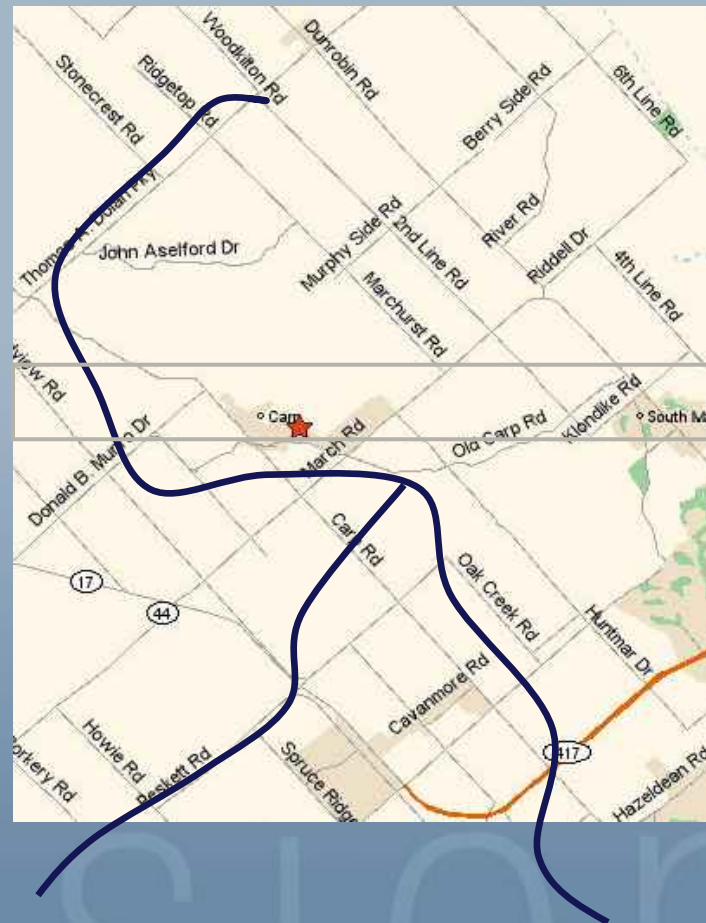
GEO-SPATIAL ROUTING
ITS NOT JUST AN
ADMINISTRATIVE
MSAG ANYMORE



Geo-Spatial Routing— ITS NOT JUST EQUIPMENT:

We must also manage the Database

- Call is routed based on its X,Y location and NOT just an ANI/ALI database
- Keys in the database are based on PSAP Boundaries and NOT just ALI addresses
- A Call's location is processed and properly MSAG validated so Operator always receives the correct address and then the Call is always routed to the correct PSAP
- Easily integrated with wireless and VoIP providers information for accurate resolution.
- Can use IP address, IM tag, VoIM tag, GPS, and not just ANI to identify Caller
- Geo-coding targets nomadic callers and Virtual PSAP's





TECHNICAL ATTRIBUTES OF GEO-SPATIAL ROUTING

- Caller identification via ANI, location, IM Tag, or IP address
 - System is not reliant on caller having a Directory Number
- Redefine PSAP boundaries in real time
 - Support mobile or temporary Response Centers
- Automatic ESN and Selective Transfer administration
 - Critical feature for mobile or temporary Response Centers
- IP traffic engineering to avoid overloading PSAP with VoIP calls.
Integrated ESQK, ESRN, LIS, SRDB, ALI, MPC
- Enable State and Nationwide Transfers
 - Using Directory Number or Address
 - Terminate calls correctly at any legacy, Hybrid or NG911 equipped PSAP

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How do I get **“MY PSAP”** to NG-9-1-1 Levels ?

- Seek funding, review technology and get Educated on fast moving
- You might have to Step out of the SAFE Box
- You might become a “Bleeding Edge” person
- You might have to give up some control and go regional
- Not waiting for the “Next Guy” so you can watch
- Bending some long time partnerships with Vendors that are not moving in the NG-911 Direction—Push the LEC, NENA i2.0 is already outdated—i3.0 will publish in May...



NG-911...Its no longer a myth ...**So...**Get Tough...Get Involved... Get NG-9-1-1 capable

- It has been a privilege to speak to you today
- We can't be successful without your involvement and help in this Next Generation **GROWTH ERA**
- Contact Name and Info:

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