State of 911

Webinar Series

NATIONAL 911 PROGRAM

September 20, 2022

State of 911 Webinar Series

- Designed to provide useful information about federal and state participation in the planning, design, and implementation of Next Generation 911 (NG911), coupled with real experiences from leaders overseeing these transitions throughout the country
- Webinars are typically held every other month and include presentations from a federal-level 911 stakeholder and state-level 911 stakeholder, each followed by a 10-minute Q&A period
- **For closed captioning**, hover at the bottom of the Zoom screen for meeting controls, then click CC to start viewing closed captioning
- For more information on future webinars, to access archived recordings and to learn more about the National 911 Program, please visit 911.gov
- Feedback or questions can be sent to: National911Team@MissionCriticalPartners.com

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2015 Emergency Communications Governance Guide for State, Local, Tribal, and Territorial Officials

September 29, 2015

In 2014, the Department of Homeland Security (DHS) Office of Emergency Communications (OEC) released the National Emergency Communications Plan (NECP) with the emphasis on enhancing decision-making, coordination, and planning for emergency communications through strong governance structures. The 2015 Emergency Communications Governance Guide for State, Local, Tribal, and Territorial Officials (Governance Guide) was developed to address Goal One in the NECP, governance and leadership.

| Governance | Policy / Procedures

49 CFR 18.24

December 14, 2009

FCC rules on optimizing the delivery and processing of enhanced wireless Phase II features and functions to PSAPs

| Technical | Networks

911 and Emergency Management Best Practices for Coordination and Collaboration

This document has been developed to address the growing need for 911 and emergency management agencies t their ability to collaborate and cooperate before, during, and after disasters or widespread emergencies.

| Governance | Planning

Celebrating 911 Telecommunicators

and Honoring the Impact They Make in Our Lives Every Day

196

Number of Telecommunicators Honored

The Tree of Life "grows" with every story told! Share how a 911 telecommunicator made a difference to your community. Add a Leaf

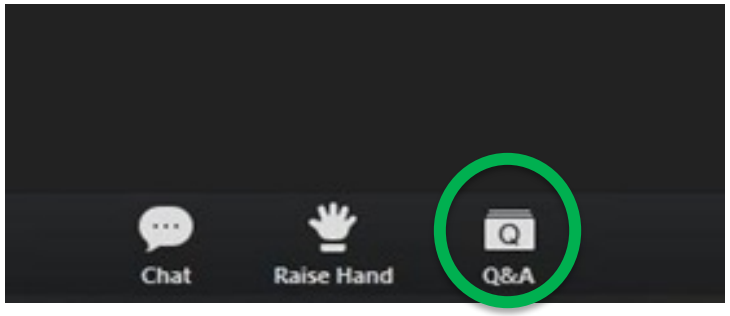
Share a Story, Sprout a Leaf

This Tree of Life has been "planted" here with the support of national 911 organizations to recognize remarkable 911 telecommunicators and the difference they make every day in our communities. Each leaf on the tree represents telecommunicators that have been honored by someone in their community.

Check back often to submit stories recognizing your telecommunicator colleagues and to view featured stories.

Questions

The “Q&A” feature is in the meeting controls that will display when hovering at the bottom of the Zoom screen.



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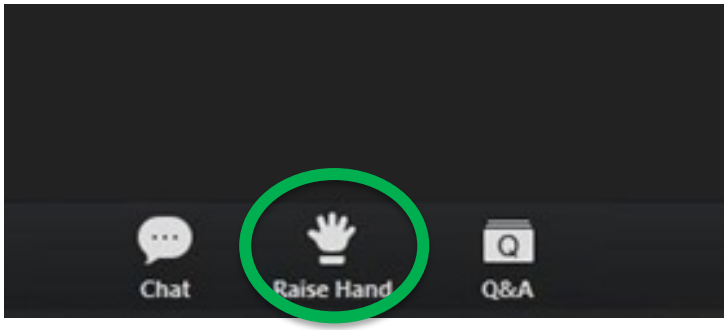


U.S. Department of Homeland Security | Science and Technology Directorate

Next Generation 911 (NG911) Conformance and Interoperability Program Overview

Science and Technology

June 22, 2022
Sridhar Kowdley
Technical Manager
Office for Interoperability and Compatibility
DHS Science and Technology Directorate

Agenda

- Background
- Overview NG911 System
- Current Ecosystem and Gap
- Proposed NG911 Effort
  - OUP
  - CISSR Funding
  - Department of Transportation Funding
- Next Steps

S&T OIC-TC's Mission & Legislative Mandate

- **Mission:** Provide subject matter expertise and core research capabilities needed to ensure that S&T maintains the ability to identify and address current and future DHS component challenges in the areas of communication and network capabilities, as well as position, navigation, timing (PNT) necessary for the functioning of many critical infrastructure sectors.

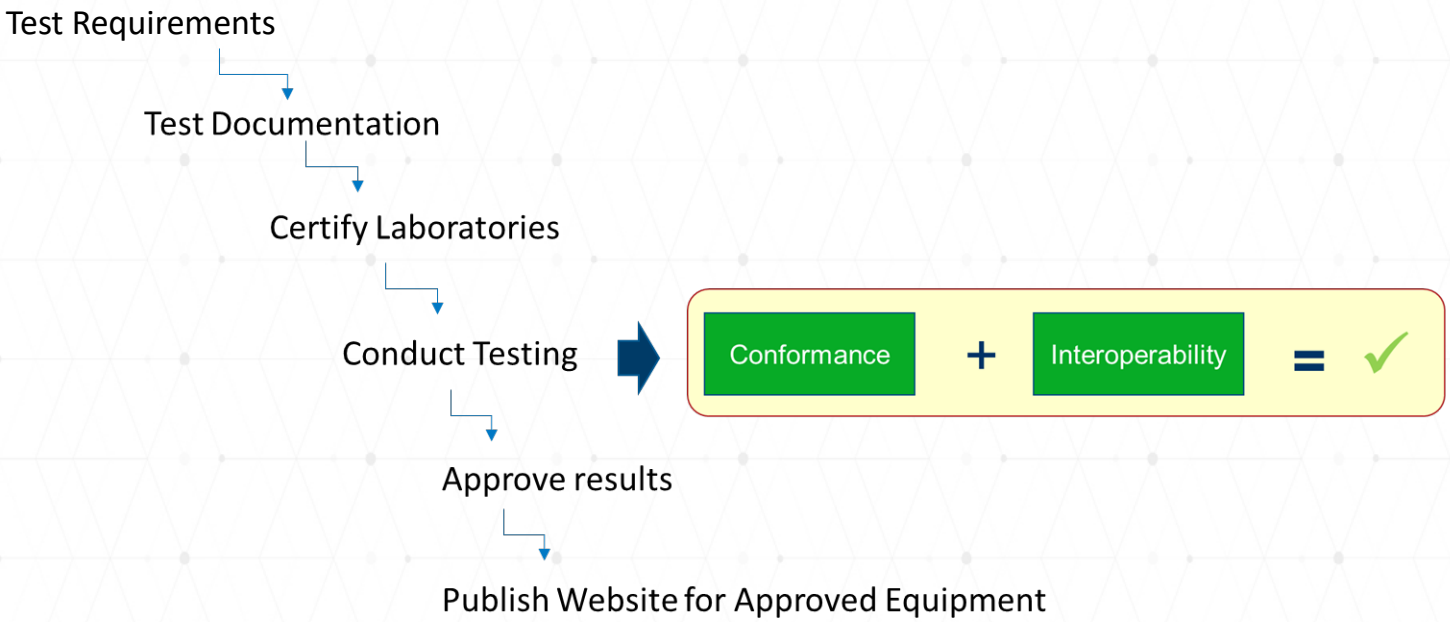
- S&T OIC-TC has a legislative mandate to enable interoperability for public safety (6 USC § 195 & 195a)
  - Evaluate and assess new technology in real-world environments to achieve interoperable emergency communications capabilities
  - Understanding the strengths and weaknesses of the public safety communications systems in use
  - Evaluating and validating advanced technology concepts, and facilitating the development and deployment of interoperable emergency communication capabilities

Science and Technology

Background

- In 2004, National Emergency Number Association (NENA) began the process of transitioning to Next Generation 911 (NG9-1-1)
  - Requirements include use of Internet Protocol, support of multi-media to include not only voice but video, text, external data and would be built on open standards
  - NENA developed the i3 standard
- Existing 911 systems were designed to meet jurisdictional needs and in many cases are unique
- There is no single approach or methodology to implement migration or upgrade to NG911 leading to potential interoperability or compatibility issues
- In 2019, DHS, the Department of Transportation (DoT) and the Department of Defense (DoD) identified the need to develop a testing and certification program to ensure that NG911 solutions developed will are interoperable and conformal to standards
  - DHS S&T ($500k)and DoT ($500k) co-funded the first phases of research to identify and approach and framework for the program In 2020, DHS S&T kicked off the NG911 Certification Program
  - DHS modeled the program on the successful DHS S&T' P25 Compliance Assessment Program
  - Strong industry engagement: NENA, NASNA, iCERT, APCO
  - Multiple Federal stakeholders: DHS S&T, DoT 911 Office, DoD CISA
- The House of Representatives recently passed legislation that would allow for up to $10 Billion in funding for NG911 equipment upgrades, which is now being considered by the Senate

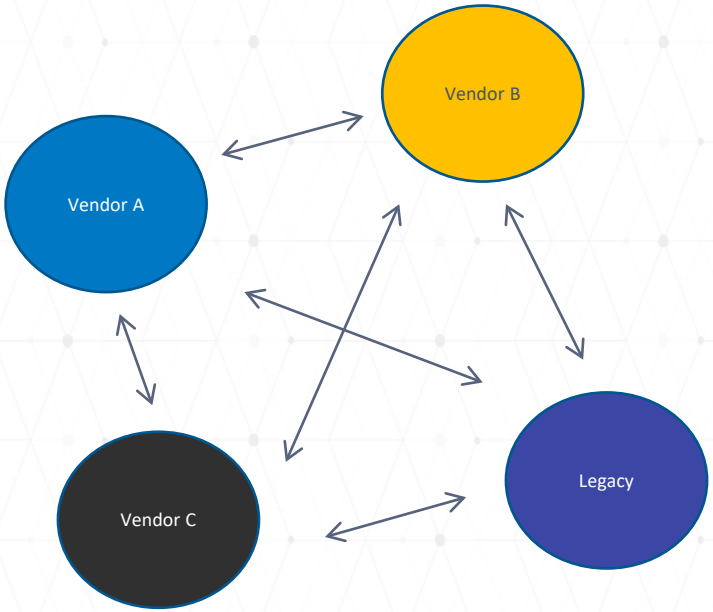
NG911 Certification Requirements



Science and Technology

NG911 Certification Requirements (Cont'd)

- Interoperability will require "Rule of Three" (Under consideration based on costs and availability of test articles)
  - Each vendor will have to Test with at least two other vendors and test with a legacy 911 system



Science and Technology

Program Tenets

- Voluntary Program (Vendors choose to participate to access federal grant funding)
- Encourage public safety acquisition programs (Federal, Local, State, and Tribal) and grant guidance to require DHS S&T certification through stakeholder engagement and outreach
- Interoperability will require “Rule of Three” (has to be vetted)
  - Each vendor will have to test with at least two other vendors and test with a legacy 911 system
- Program should be “sustainable” – Once established, Program should be open to industry to conduct and sustain testing (e.g., testing as a service offered by accredited laboratories) ; Government (Federal, State, Local, Tribal and Territorial) will provide oversight and guidance; DHS S&T will review reports and post “approved solutions” on S&T website
- APPROACH
  - Transparent, Practitioner-Lead Governance
  - Establish governance policy
  - Establish Technical policy

Program Stakeholders

- Federal Government Partners (funding programs and providing policy requirements)
  - DHS S&T, DHS CISA, Department of Transportation, Department of Defense, Federal Communications Commission, National Telecommunications and Information Administration
- NG911 Partners
  - NENA
  - NG911 Interoperability Oversight Commission (NIOC)
  - National Association of State 911 Administrators (NASNA)
  - European Emergency Number Association (EENA)
- Users
- Industry

Program Overview

- Program Developed a Three-Phased Approach
  - Phase 1 – Completed: Operational and Technical Requirements Gathering and stakeholder engagement with Industry, Users and 911 operators)
  - Phase 2 – In Progress: Testbed Framework Build and Scenario Development (Develop the Interoperability Test Cases and approve Test Laboratories to conduct certification testing)
  - Phase 3 – Funding Required: Test Suite Development and Program Launch (DHS Funding)

Program Phases

- Phase I: Operational and technical requirements for NG911 interoperability and to develop a plan for empirically testing interoperability (Co-funded by DHS/DoT)
  - Phase II: Testbed network design and implementation; validation of test scenarios – proof of concept (Funded by DoT/DHS)
    - Phase III: Development of Test Tools, Framework for reporting, lab certification, and program stand-up (Funded by DHS)
      - Program Sustainment (Vendors/Users of tools and Certification) – Will require support from industry and stakeholders

Phase I - Complete

- Purpose: To understand operational and technical requirements for NG9-1-1 interoperability and to develop a plan for empirically testing interoperability.
- Objectives are:
  - Seek stakeholder consensus on requirements for interoperability.
  - Identify technical means for conducting interoperability testing.
  - Identify a sustainable business model for interoperability testing.
- Activities:
  - Stakeholder meetings: sub-committee meetings and individual interviews
  - Industry research and interviews
  - Test case identification
  - Sample test development – for budgeting/planning
  - Priority survey – for scoping/staging

Phase 2 – In Progress

- February 2022 start
  - Funded by DHS and DoT (awaiting contracting)
- Tasks
  - High-level network design for full testbed: COMPLETE
    - Design will be developed for conducting the Interoperability and Conformance testing
  - Network implementation: IN PROGRESS
    - Build a test bed to conduct
  - Develop and validate test call scenarios: PENDING
    - Conduct tests to ensure the tests can be conducted (build test approach and procedures
    - Support Test Case documentation (documentation submission will be used to approve test results by DHS)
  - Complete end-to-end testing proof of concept: PENDING

Phase 3: Early Planning

- Stand up the program by formalizing the testing approach, program requirements and governance
- Develop tools and capabilities to promote adoption and testing platform in a timely manner to make the program affordable, sustainable and accessible to industry
- Develop conformance and interoperability tools for the conduct of testing with
  - Open-Source (free to use, contribute; community support) and
  - Agile (rapid, small releases; get early feedback, facilitate early course correction; industry best practice) development models
- Standup a laboratory that is ISO-17025 Certified to conduct testing on behalf of DHS
  - Process will be documented for any industry participant to become a certified DHS NG911 laboratory
- Launch Production Testing

Phase 3 Deliverables

- Conduct NG 911 Test Suite Development Summit –(August 22-23, 2022)
- ISO 17025 test lab certification and process documentation
- Develop Test Report Format - NG911 Interoperability DHS CAP
- Develop Conformance Tests
- Develop End-to-End Tests
- Refine End-to-End Test Cases
- Beta Testing Test Suite
- Homologate NG911 and EENA NG 1-1-2 efforts
- Advisory Board Engagement
- Outreach/Presentations
- Develop Test Program Sustainability Plan
- Launch Production Testing

Questions

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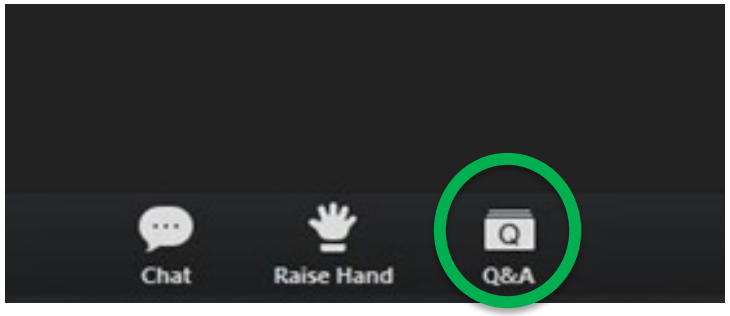

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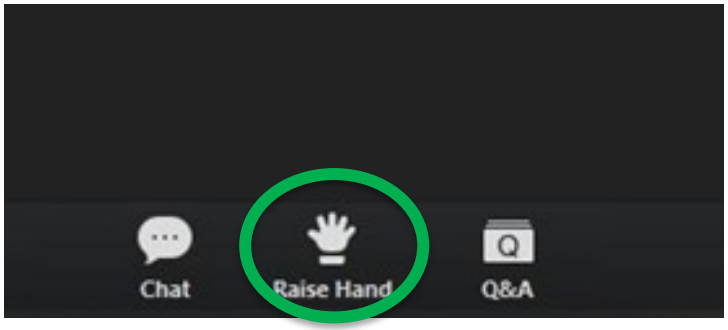


Cal OES
GOVERNOR'S OFFICE
OF EMERGENCY SERVICES

NG 9-1-1 and Conformance Testing
State of 9-1-1 Webinar Sept 2022

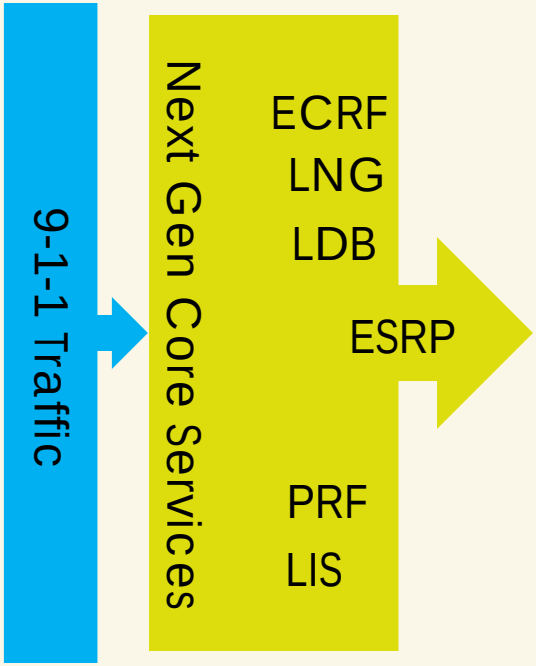
Budge Currier, CA 9-1-1 Branch Manager, Public Safety Communications

Discussion Overview
State of 911 Webinar – Sept 2022

- NG 9-1-1 – The NENA i3 Standard: How it really works
- NG 9-1-1 – California Interop Example
- NG 9-1-1 – End to End versus Components Testing
- NG 9-1-1 Testing – Lessons learned
- NG 9-1-1 and Data Sharing Testing

Sept 2022

9-1-1 traffic routing with NG 9-1-1 Definitions



ESRP - Emergency Services Routing Proxy essentially replaces the selective routers in NG 9-1-1.

ECRF - Emergency Call Routing Function is the functional element where caller location and routing information for that call is stored (think GIS)

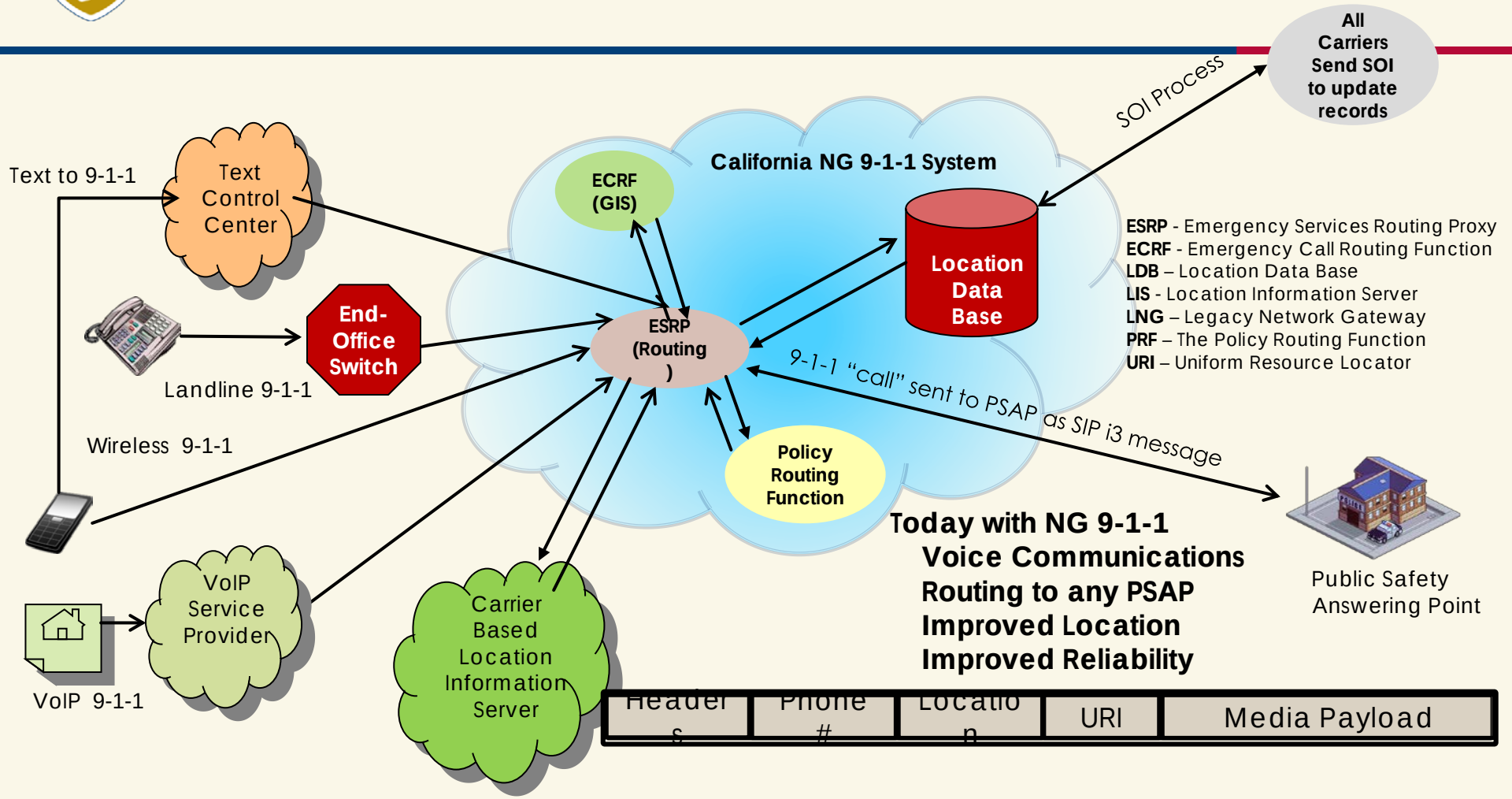
LDB – Location Data Base server retains all of the current information, functionality, and interfaces of today's ALI and can utilize the new protocols required in an NG 9-1-1 deployment

LIS - Location Information Server is used in conjunction with the LDB

LNG – Legacy Network Gateway – performs specific interworking functions to support ingress of non-i3 calls into the i3 network

PRF – The Policy Routing Function is where default, alternate, contingent, and emergency routes are located. The PRF is the specific functionality regarding 9-1-1 traffic routes

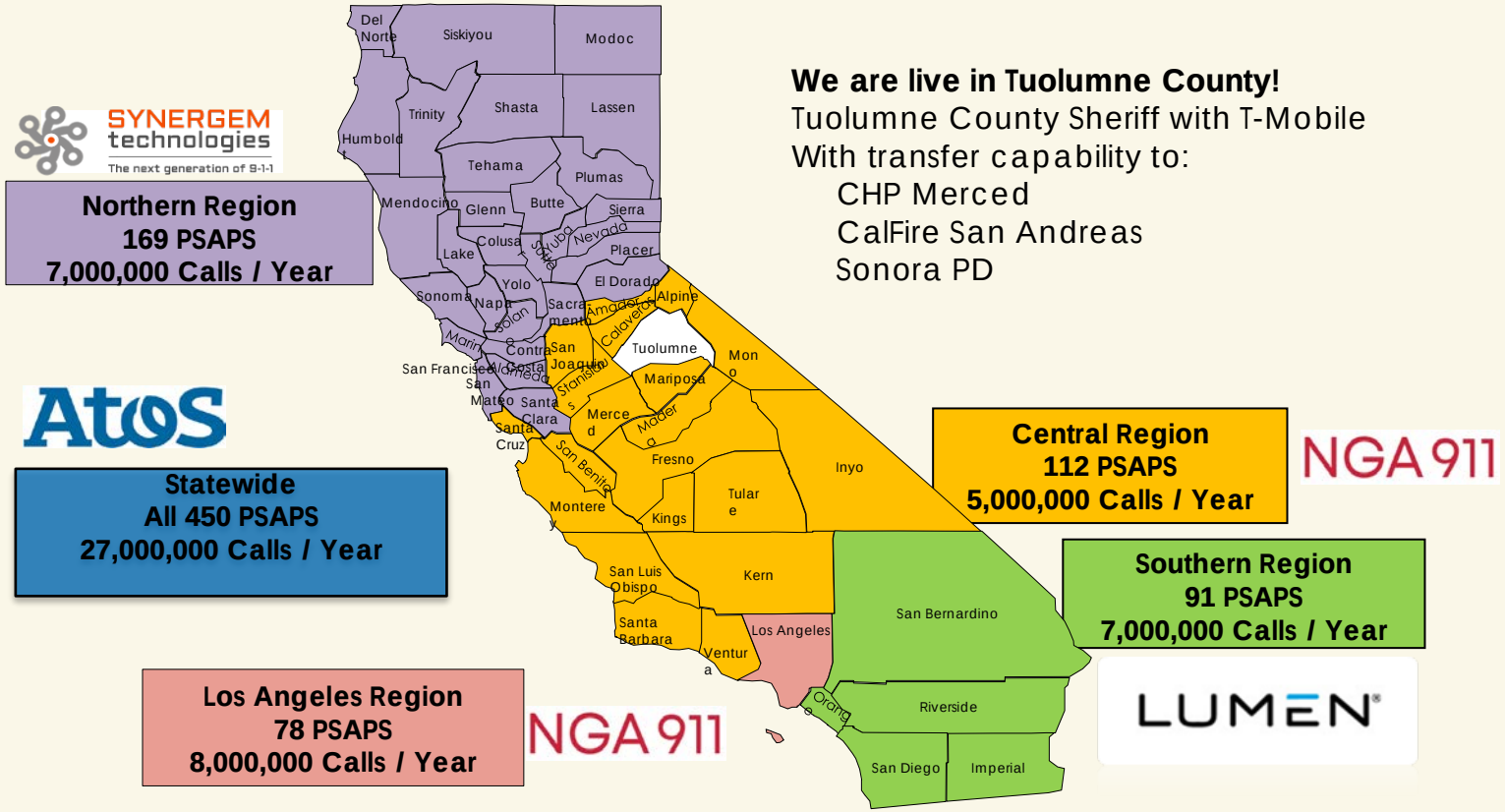
NG 9-1-1 – Call routing



CA NG 9-1-1 System Overview

- 449 PSAPs annual call volume of 27 Million 9-1-1 calls
- Entire state is currently an E911 system with all PSAPS accepting wireless 9-1-1 calls
- Cal OES manages the entire E911 system, manages and procures CPE, and works with PSAPs to ensure operational alignment
- NG9-1-1 consists of 4 regional NG 9-1-1 providers (, Synergem, NGA 9-1-1, and Lumen) connected to every PSAP in Region, and statewide NG 9-1-1 provider (Atos) connected to every PSAP
- Over 4000 endpoints in the network
- Entire Network is IPv6 using SD-WAN
- Multiple vendor technologies have been integrated
- True NENA i3 NG9-1-1 deployment, with geospatial routing and location via SIP i3
- Includes PKI to implement PSAP Credentialing Agency certificates
- Numerous vendor partnerships

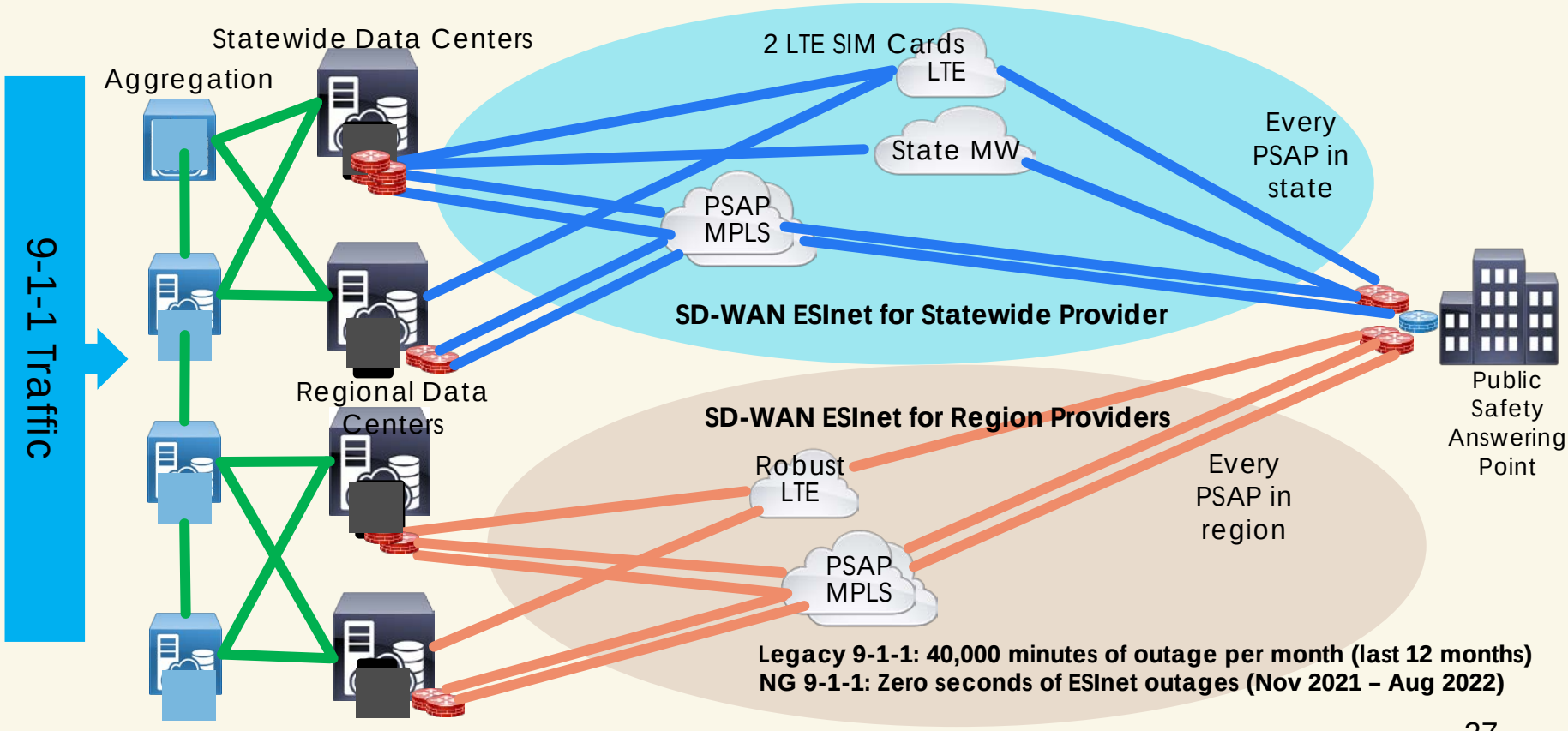
Next Gen 9-1-1 Deployment



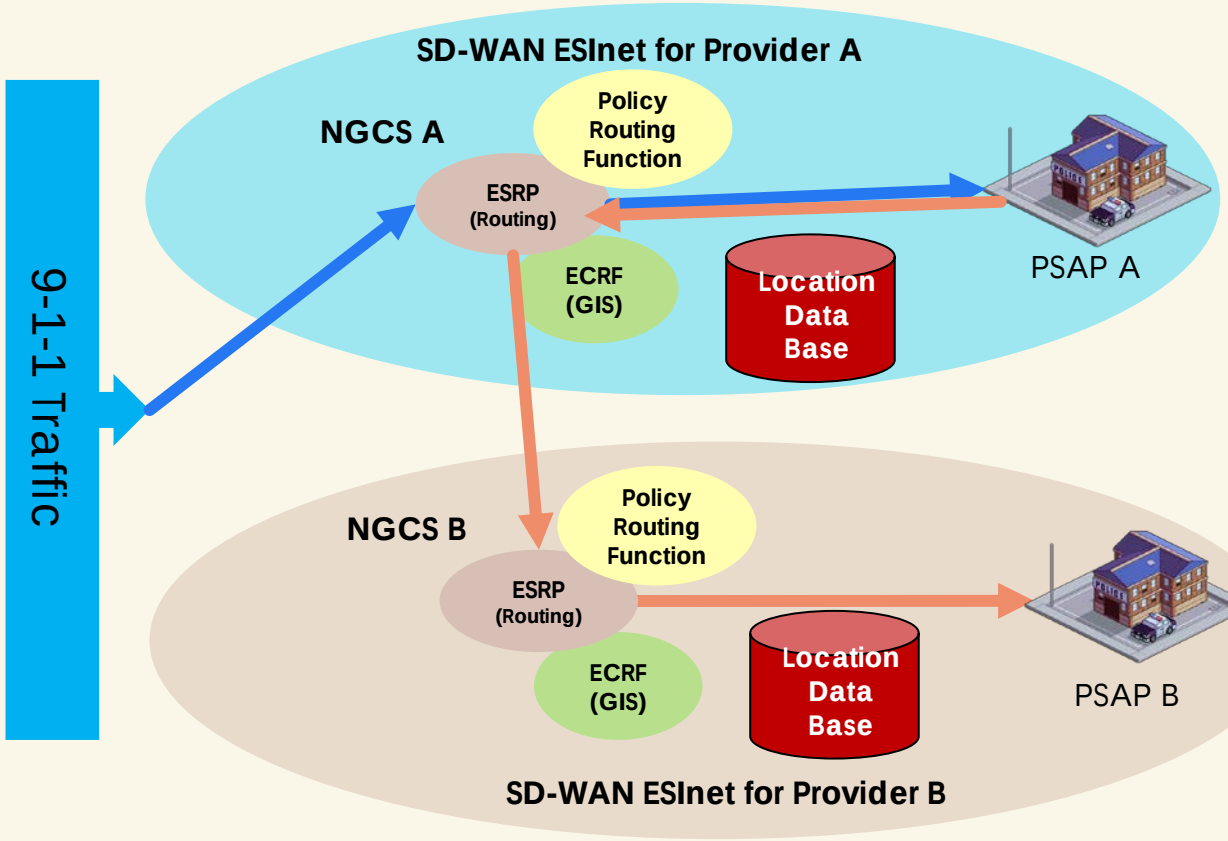
We are live in Tuolumne County!
Tuolumne County Sheriff with T-Mobile
With transfer capability to:
- CHP Merced
- CalFire San Andreas
- Sonora PD

Sept 2022

NG 9-1-1: Connectivity at the PSAP



NG 9-1-1: End to End versus Component Level Testing



End to End Testing Components

1) BGP Pairing
2) PKI between NGCS
3) Policy Store
4) Forest Guide or GIS Boundary Layers
5) NGCS A anchors SIP session
6) Interaction of NGCS
7) Call Processing Equipment at PSAP

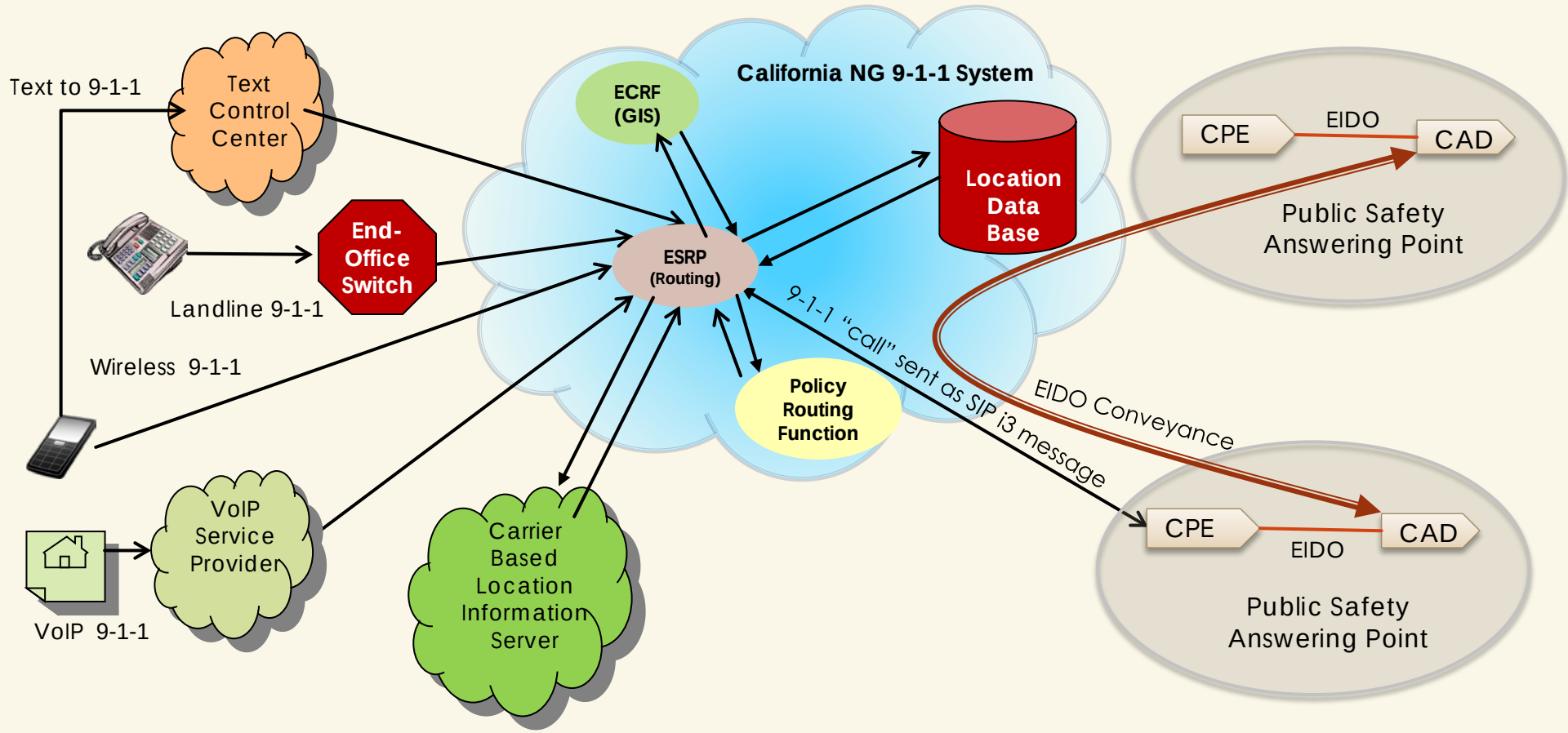
9-1-1 Call Delivered

9-1-1 Call Transfer

NG 9-1-1 Testing: Lessons Learned

- Multiple autonomous systems that require connection points using BGP
- Routing is extremely complicated
- Internet Protocol, Version 6 (IPv6) (Need Network Address Translation is needed for IPv4)
  - Companies that provide equipment are new to the IPV6 environment
- Transport Layer Security (TLS) needed for the Private Key Infrastructure
- Unique IP address needed to dereference a NENA i3 call for a carrier-maintained Location Information Service
- Standard supports 2 methods for transfers: Ad Hoc and Answer all calls at Bridge
  - Reality is today's CPE can only support Answer all calls at a bridge
- Location Database (LDB) – "messy" during the transition
- Vendors have not had the advantage of testing with a reference system
  - Importance of testing and validation in the Cal OES lab
  - Importance of talking with those implementing NG 9-1-1

NG 9-1-1 and Data Exchange



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Any Questions

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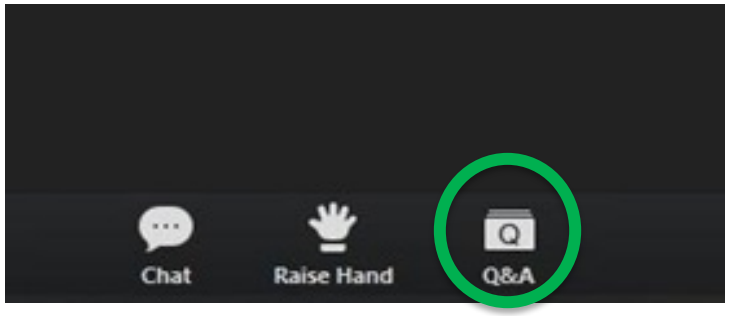

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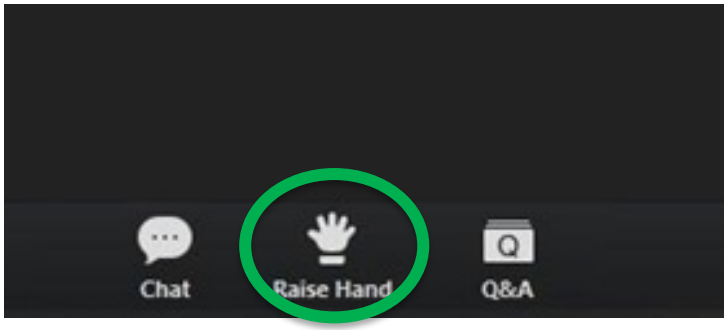

Future Webinars

- November 8, 2022 - https://us06web.zoom.us/webinar/register/WN_1vH21ZUYQlGi8L1aDr5m4Q

- Previous State of 911 webinars are available at: www.911.gov/webinars.html

National 911 Program

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