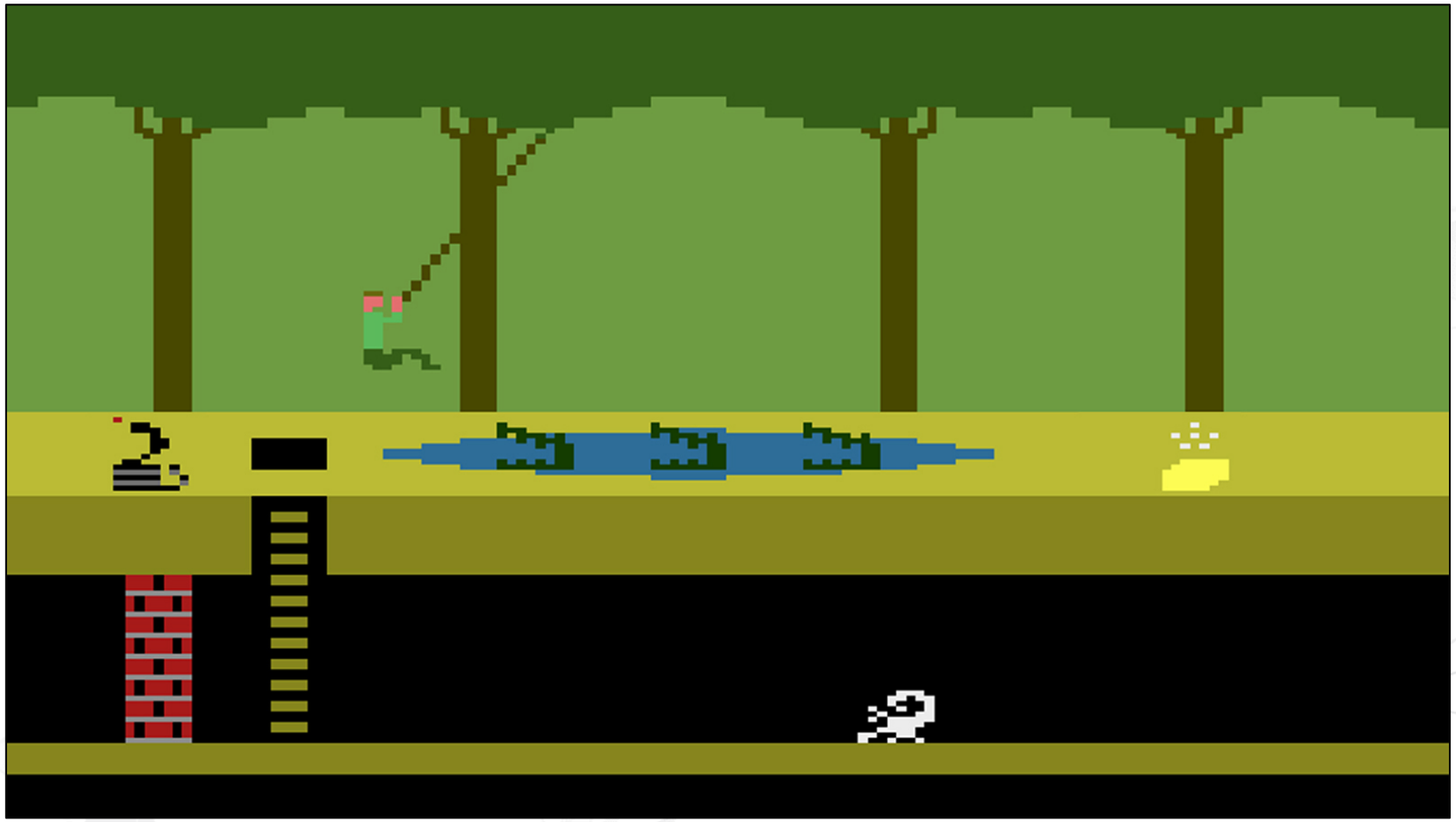
Deploying NG911 Pitfalls and Considerations

2024 Central Florida Region NENA

February 29, 2024

Winter Haven, FL

For Some Implementing NG911, It's a Jungle Out There



Today, we'll seek to dispel common misconceptions with Next Generation 911 implementations and discuss technical, operational, policy, and funding considerations

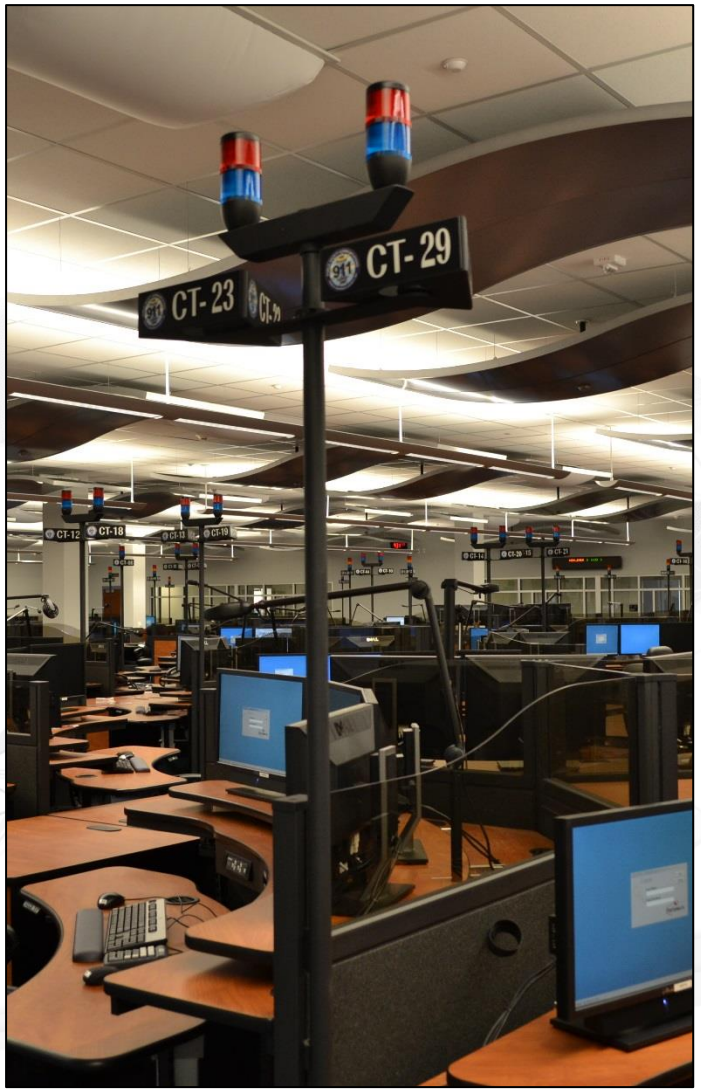
First, a quick refresher (or introduction) to NG911

Why Next Generation 911?

- Legacy 911 technology is outdated
- IP networks are more secure, more stable, more better redundancy
- Enhanced reliability and resiliency
- Enables interoperable data sharing
- Public expectations
- Ability to meet equal access and special needs
- Support for multimedia / sensor data / IoT

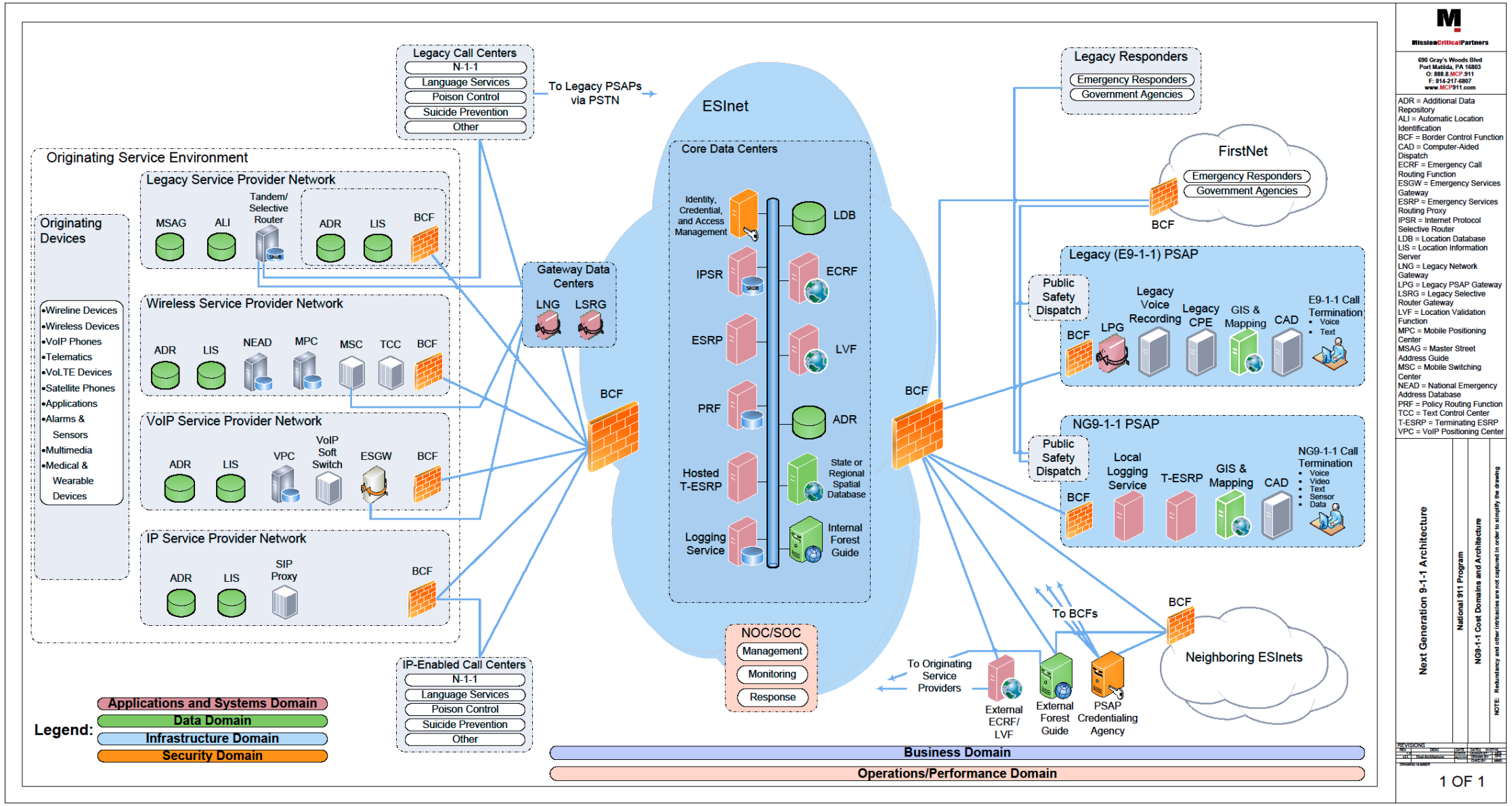
What Is Next Generation 911?

- A secure, “public safety grade” network
- Core functions and data (including location-based call routing and accurate, localized GIS data)
- 911 center call handling equipment (CHE)



The Emergency Communications Ecosystem

“End-State” ESInet and Next Gen Core Services (NGCS)



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ADR = Additional Data Repository
ALI = Automatic Location Identification
BCF = Border Control Function
CAD = Computer-Aided Dispatch
ECRF = Emergency Call Routing Function
ESGW = Emergency Services Gateway
ESRP = Emergency Services Routing Proxy
IPSR = Internet Protocol Selective Router
LDB = Location Database
LIS = Location Information Server
LNG = Legacy Network Gateway
LPG = Legacy PSAP Gateway
LSRG = Legacy Selective Router Gateway
LVF = Location Validation Function
MPC = Mobile Positioning Center
MSAG = Master Street Address Guide
MSC = Mobile Switching Center
NEAD = National Emergency Address Database
PRF = Policy Routing Function
TCC = Text Control Center
T-ESRP = Terminating ESRP
VPC = VoIP Positioning Center

Next Generation 9-1-1 Architecture

National 911 Program

NG9-1-1 Cost Domains and Architecture

NOTE: Redundancy and other intricacies are not captured in order to simplify the drawing

REVISIONS

Fundamental Assumptions For End-State NG911

- All calls entering the ESInet are **SIP-based**
- Access Network Providers have installed, provisioned, and operate some kind of **location determination** and dissemination function
- All emergency calls entering the ESInet/NGCS have location information **in the signaling with the call**
- 911 Authorities have transitioned from the tabular MSAG and ESNs to a GIS-based **Location Validation Function (LVF) and Emergency Call Routing Function (ECRF)**
- 911 authorities have sufficiently **accurate and complete GIS data**,
- All civic locations will be **validated against the LVF** prior to an emergency call
- **Transition to i3 is complete when the existing legacy SR and ALI are no longer used within a jurisdiction**

Source: NENA i3 Standard for Next Generation 911 – NENA-STA-010.3d-2021 (pages 3-4)

Sounds easy enough – so what's the problem?

- Analog landlines are still a thing
- VoIP and cell phones using Wi-Fi calling use the internet to make calls (and their device location is self-reported)
- Geospatial call routing is not possible without a location
- Transitioning to native-SIP (all IP) call delivery is slow, especially in rural areas, dominated by small, independent carriers
- Interpretation / implementation of NENA's i3 standard differs from vendor to vendor (and inter-NGCS interoperability is lagging)
- Selective routers are still a thing too – some have been in continuous operations for more than 250,000 hours
- Not all geospatial data is NG911-ready

Too many transformation projects still fail – what gives?

- Lack of project management expertise
- Lack of executive-level sponsorship or support
- Lack of engagement or accountability
- Not involving all stakeholders (or the right stakeholders)
- Not managing change
- Insufficient resources

The recipe to a successful NG911 implementation

Top Takeaways

- The contract is based on the vendor's and agency's implementation methodology
- The contract has deliverables and basic acceptance criteria with a plan prior to kickoff
- Don't ask the vendor to do work they are not good at
- The vendor is part of the team
- The team embraces risk holistically
- If the vendor succeeds, the agency succeeds
- The relationship matters most

Tips for fully implementing a NENA i3-compliant NGCS

- Ask (often): “When will you (NGCS Provider) transition to actual GIS geospatial routing?”
- Asked differently: “Are there any reasons why the NG911 solution cannot be fully using geospatial call routing based on real-time location information from the caller other than the OSP not being ready?”
- Getting to specifics: “How many OSPs are left to convert to using LVF/ECRF instead of ALI/MSAG?”
  - Are ALL OSPs ready to deploy location information servers (LIS)?
  - Are wireline OSPs verifying location vs LVF?
  - What OSPs still are relying on LNG services to derive call routable location?

Civic Location Data Exchange Format

The Important Acronyms for Your Nerds

- CLDXF: Spell everything out
- CAD: Likely does not support CLDXF
- ETL: Keep the data in CAD format and transform to support NG911 NGCS SI requirements

EIDO – Only a Small Piece of the Puzzle

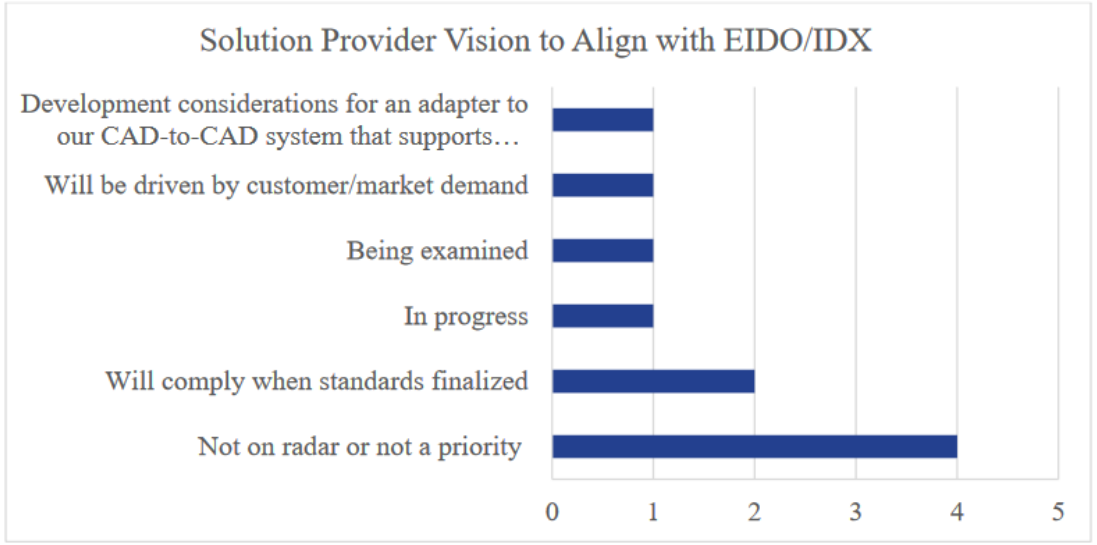


Figure 7: Solution Provider Vision to Align with EIDO/IDX

https://www.911.gov/assets/NHTSA-CAD-Strategies-for-the-Future_Mar-2023_Final.pdf

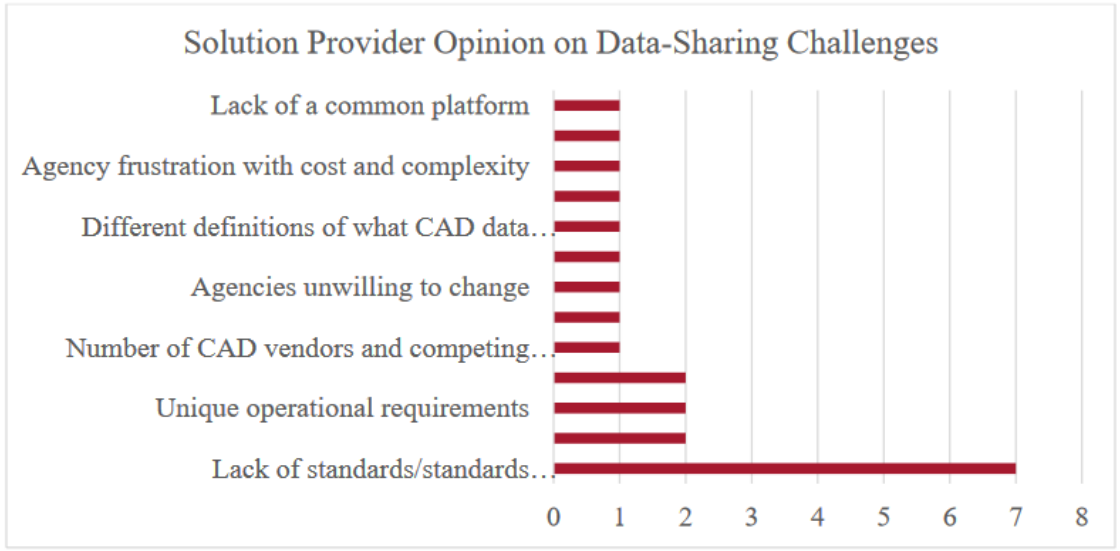
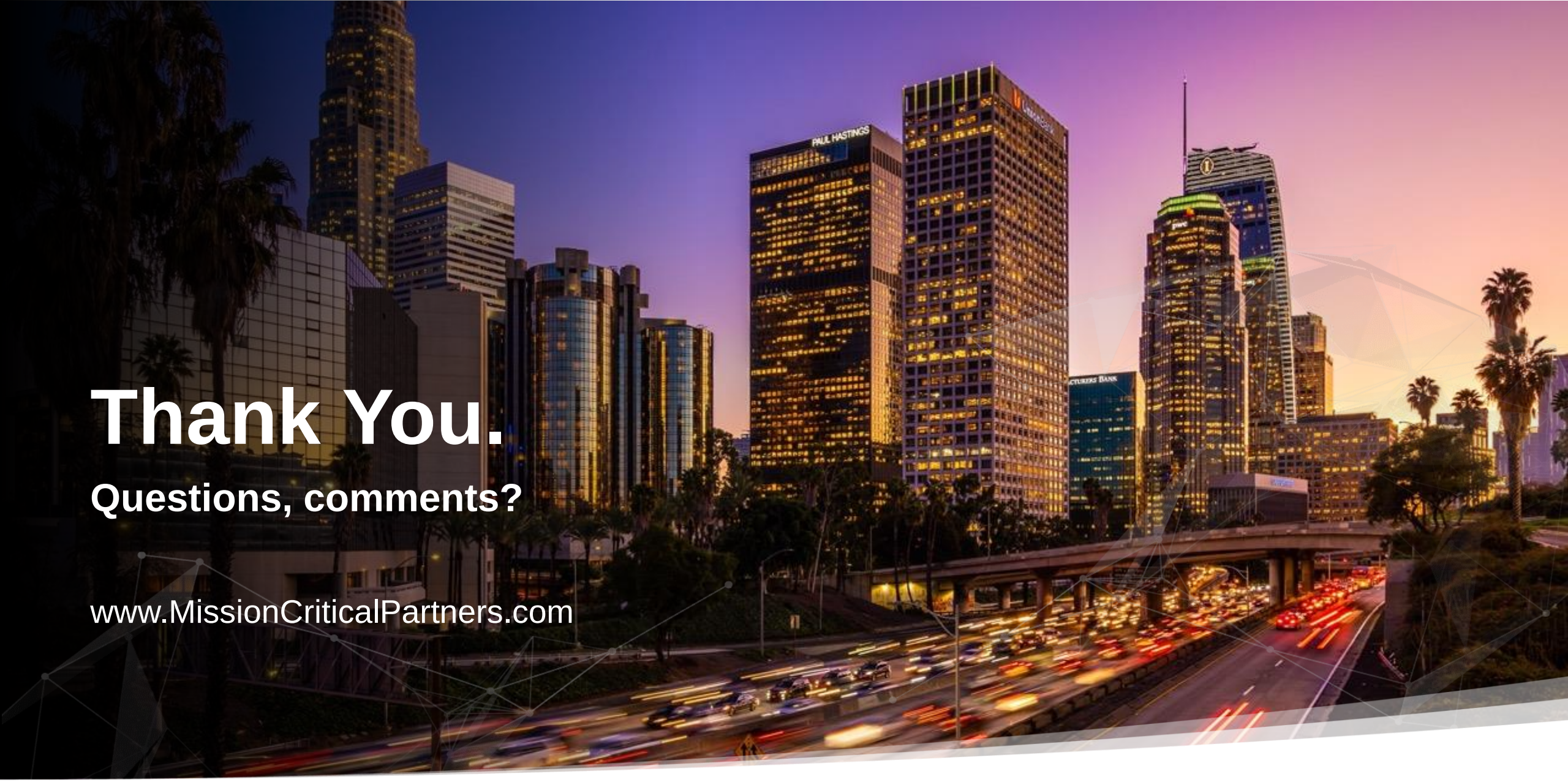


Figure 5: Solution Provider Opinion on Data-Sharing Challenges

Computer-Aided Dispatch Interoperability Strategies for Success



Thank You.

Questions, comments?

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