Fighting Fire With Data:
The National Emergency Response Information System (NERIS)

April 10th, 2024

National Alliance for Public Safety GIS (NAPSG) Foundation
napsgfoundation.org | @napsgfoundation

Webinar Prep

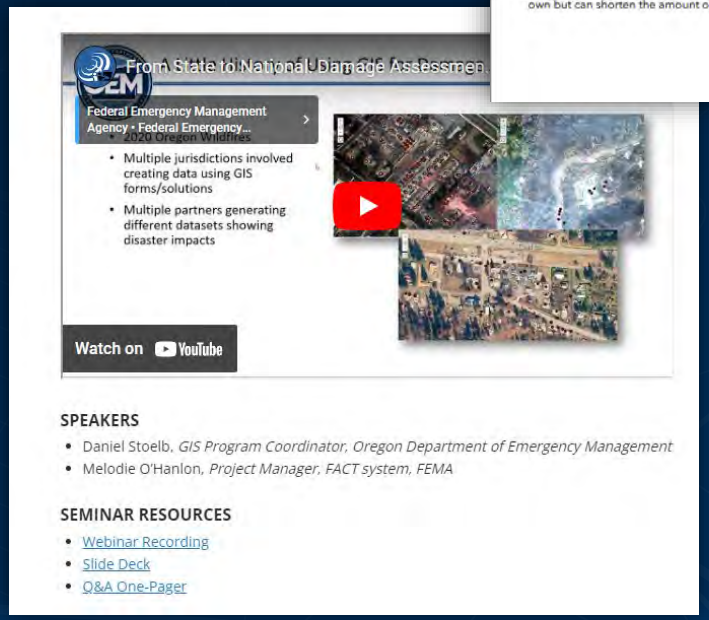
- Due to the large attendance, all participants are muted for the duration of the session to prevent background noise.
- Please use the CHAT function within Teams for questions that are relevant to the whole group.
- We will address Questions throughout the webinar.

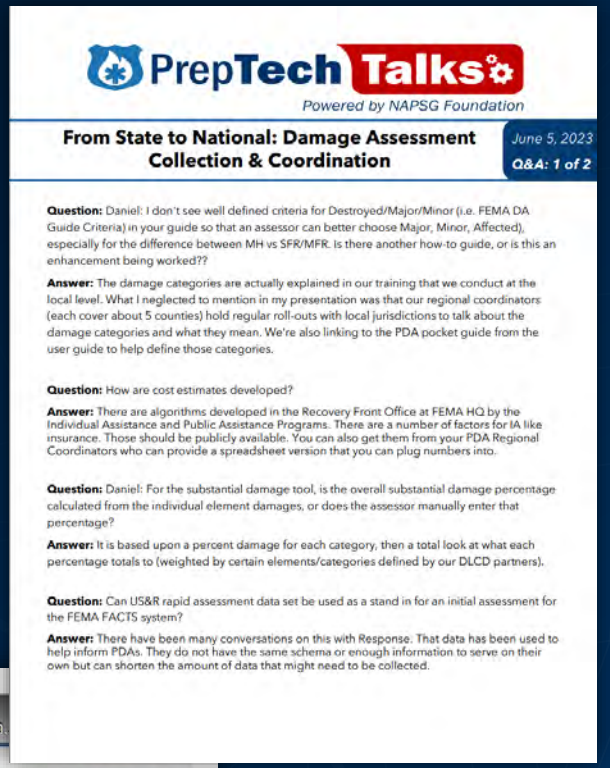
NAPSG Foundation

After the Webinar

Resources will be made available.

- Emailed to all registrants
- Posted on NAPSG's website: Resources tab
- Shared on social media: Twitter, Facebook, LinkedIn *@napsgfoundation*





NAPSG Foundation

Agenda

01

Introduction

NAPSG Foundation

02

Fighting Fire with Data

Presentation

03

Closing

NAPSG Foundation

NAPSG Foundation

01 | Introduction

About NAPSG Foundation

- 501(c)(3) non-profit organization established in 2005
- +20,000 members: Public Safety Officials, Operators, and GIS Staff

  Mostly in the US, but spans the globe
- All training, tools, best practices and other resources provided at no cost

NAPSG Foundation Mission

Advance Geospatial

technology and capabilities for and with the public safety community

Foster Adoption

of geospatial tools, information, and best practices for planning, daily operations, and disasters

Bridge the Gaps

across agencies and disciplines, to better protect the communities they serve

NAPSG Foundation

02 Fighting Fire With Data:
The National Emergency Response Information System (NERIS)

Goal and Objectives

Goal

Gain a basic understanding of the new National Emergency Response Information System (NERIS), which will be launching in 2024.

Objectives

- Learn about the core features and functionality that will be available through NERIS.
- Gain insights on how you'll be able to use the system and apply NERIS-derived data and analytics to support GIS-based risk assessments, risk reduction efforts, mitigation strategies, and planning efforts.
- Develop a plan for onboarding your department or organization onto NERIS and ways to implement NERIS capabilities organization-wide.
- Engage directly with the NERIS team and contribute ideas on enhancing the platform.

Speakers

Rebecca Harned, Advisor
U.S. Fire Administration

(ret.) Chief Tom Jenkins, Senior Advisor, Fire Safety Research Institute

David Alexander, Senior Science Advisor
DHS Science & Technology Directorate

Craig Weinschenk, Principal Investigator,
Fire Safety Research Institute

NERIS

EMPOWERING EFFECTIVE EMERGENCY RESPONSE

A New Era of Emergency Response Data & Analytics

Science and Technology | U.S. Fire Administration | Fire Safety Research Institute

THE MISSION

We **support** and **strengthen** the fire and emergency medical services … to prepare for, prevent, mitigate, and respond to ALL Hazards…

- ★ Fire and EMS Training
- ★ Research (and Technology)
- ★ National Fire Data Center
- ★ Community Risk Reduction

*CRR= Process to identify and prioritize local risks, integrated / strategic investment of resources to reduce risk occurrence and impact.

FEMA | U.S. Fire Administration

15 USC 2208 – National Fire Data Center

- The Administrator shall **operate, directly or through contracts or grants, an integrated, comprehensive National Fire Data Center** for the *selection, analysis, publication, and dissemination of information* related to the…
  - **prevention**
  - **occurrence**
  - **control**
  - **results …. of fires of all types**

The Problem – Do you agree?

"A lack of understanding of fire's threat helps to account for the low priority given to fire protection."

A quote from American Burning 1973, page 2.

Partnerships for NERIS

U.S. Fire Administration

Science and Technology

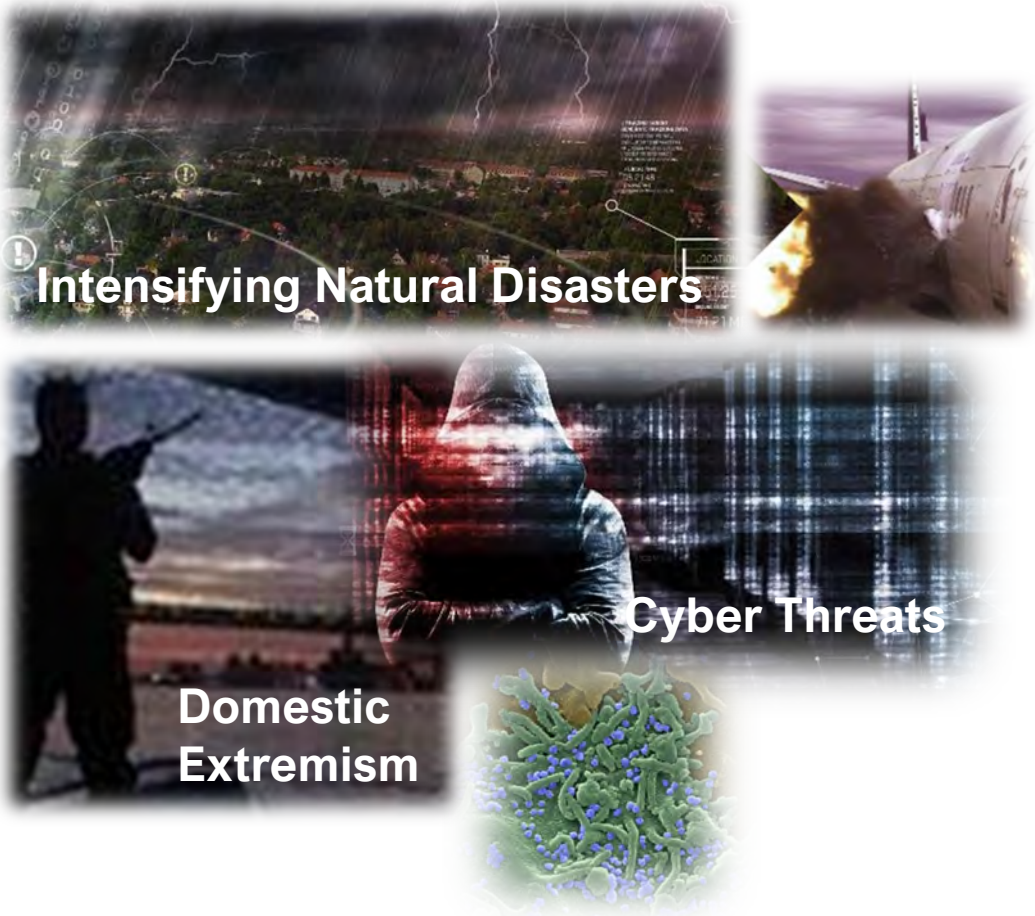
- Interagency agreement established between USFA and DHS S&T.
- Research and development contract awarded through the U.S. Department of Homeland Security Science and Technology Directorate (DHS S&T) to the Fire Safety Research Institute (FSRI).
- FSRI is a part of UL Research Institutes, the nonprofit safety science organization within the UL enterprise.

Science & Technology

*We serve as the **science advisor** and **research and development arm** of the Homeland Security Enterprise.*

DHS operates in a ***constantly changing security environment*** with threats from many directions.

In parallel, we are experiencing an ***emerging technology revolution*** that offers ***enormous potential*** to enhance Homeland Security and Emergency Management operations but also creates ***risk*** of escalating these threats



Exploring new S&T frontiers

S&T is investing in new sensor, platforms, and risk analysis capabilities such as AI and IoT sensors to close gaps in EM capability.

We are also exploring the Future of Emergency Management to better understand how global change, emerging threats and technology are impacting Emergency Management and First responder communities..

NERIS

NATIONAL EMERGENCY RESPONSE INFORMATION SYSTEM

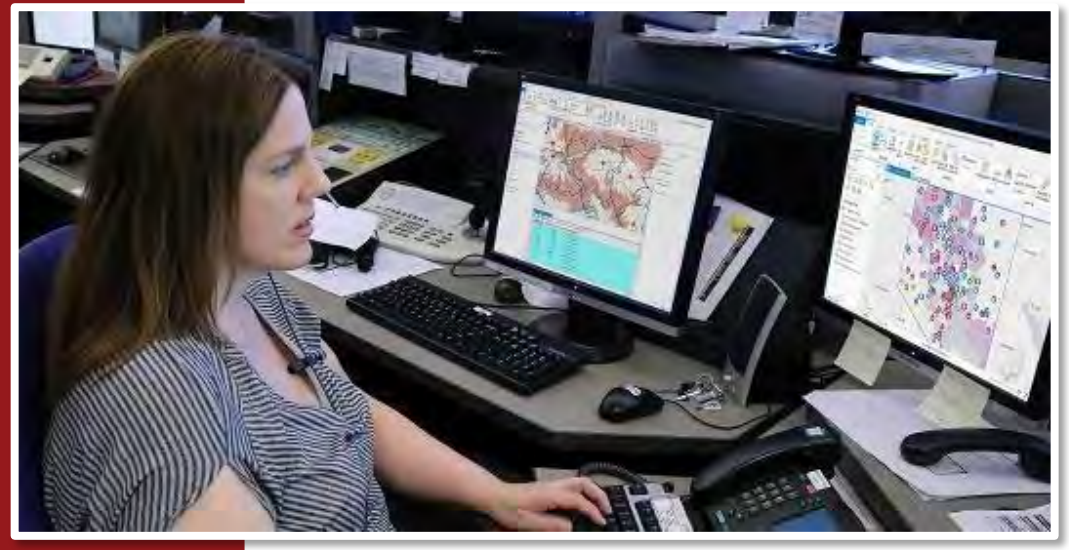
The goal of NERIS is to empower the local fire and emergency services community by equipping them with near real-time information and analytic tools that support data informed decision-making for enhanced preparedness and response to incidents involving all hazards.

Guiding Objectives

- Premier source for nationwide, all-hazards incident information.
- Replace the 20+ year legacy NFIRS.
- Improve quality, coverage, and timeliness of local, all-hazards incident data.
- Responsive Design - Fully accessible on mobile devices, tablets, laptops, and desktop computers.

Approach & Core Functionality

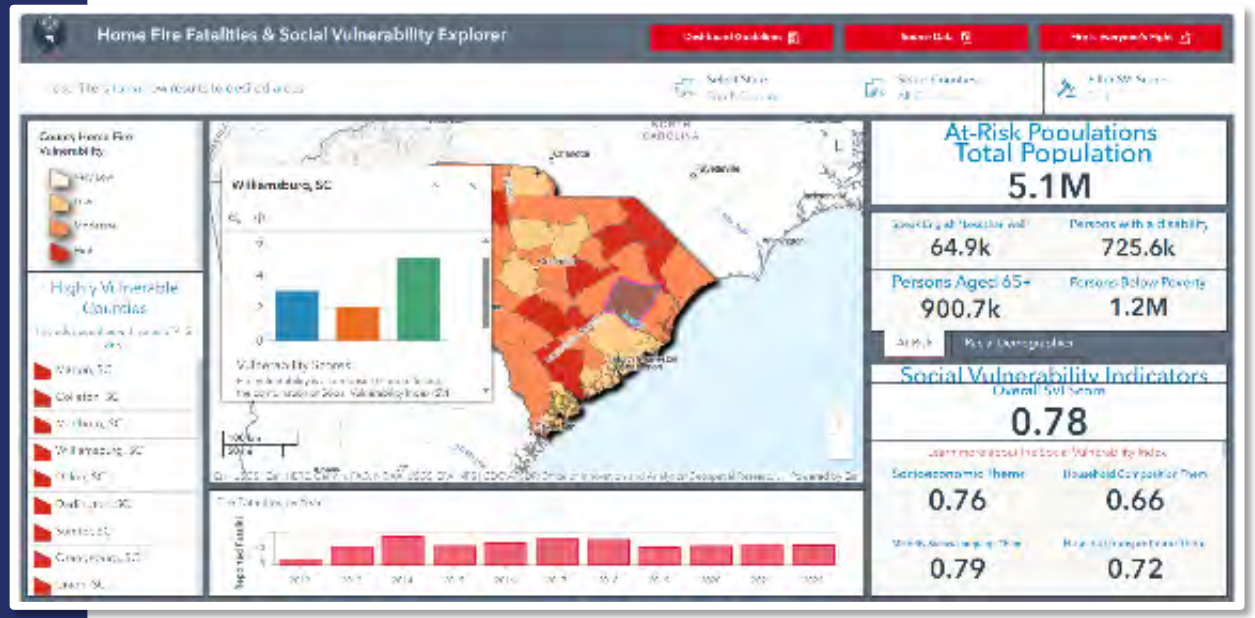
- Secure and cloud-hosted architecture.
- Interoperability & data sharing via data services (APIs).
- Consume existing, relevant data.
- Reduce data entry burdens via integration and analysis of data.
  - Computer-aided dispatch systems (CAD)
  - Geographic information systems (GIS)
  - Records Management Systems (RMS)



FEMA

Powering Innovative Analytics

- Data management and integration environment for fire-based incident data.
- Near real-time intelligence into vulnerabilities and capability gaps.
- Capture data on community risk reduction programs at local level and visualizes trends.



FEMA | U.S. Fire Administration

What information do leaders need?

- Social Vulnerability
- Structures in the First Due
- Code Adoption
- Evolving Climate Hazards

RISK

- Response Time
- Effective Crew Size & Response Force
- Inform Training Needs

PERFORMANCE

- Resource Allocation
- Monitor Staffing Levels
- Station & Unit Capacity

DEPLOYMENT

Choose How You Report

BASIC

Department does not have CAD or RMS, or not connected to NERIS.

Reports through NERIS data capture apps.

INTERMEDIATE

Department has CAD, but no RMS.

Reports some information through NERIS data capture apps.

ADVANCED

Department has CAD and RMS, or RMS integrated with CAD.

Local data is pushed to NERIS from CAD & RMS via API.

FEMA

NERIS Environment

BASIC – Department does not have CAD or RMS, or not connected to NERIS. Reports through NERIS data capture apps only.

INTERMEDIATE – Department has CAD, but no RMS. Reports some information through NERIS data capture apps.

CAD

CAD

RMS

ADVANCED – Department has CAD and RMS, or integrated RMS w/ CAD. Local data is pushed to NERIS from CAD & RMS via API.

FD #1 NERIS Node

FD #2 NERIS Node

FD #3 NERIS Node

NERIS Data Capture Apps Fusion & Analytics Engine

- Data management and integration environment.
- NERIS-provided data capture apps for data collection.
- Basic self-service analytic products for FDs and state-level views.
- Advanced models and analysis methods for use nationwide.

API

NERIS Secure Cloud Boundary

State Fire Marshal Nodes & Data

Local Fire Dept. Data

Research Derived Models

Other National Systems

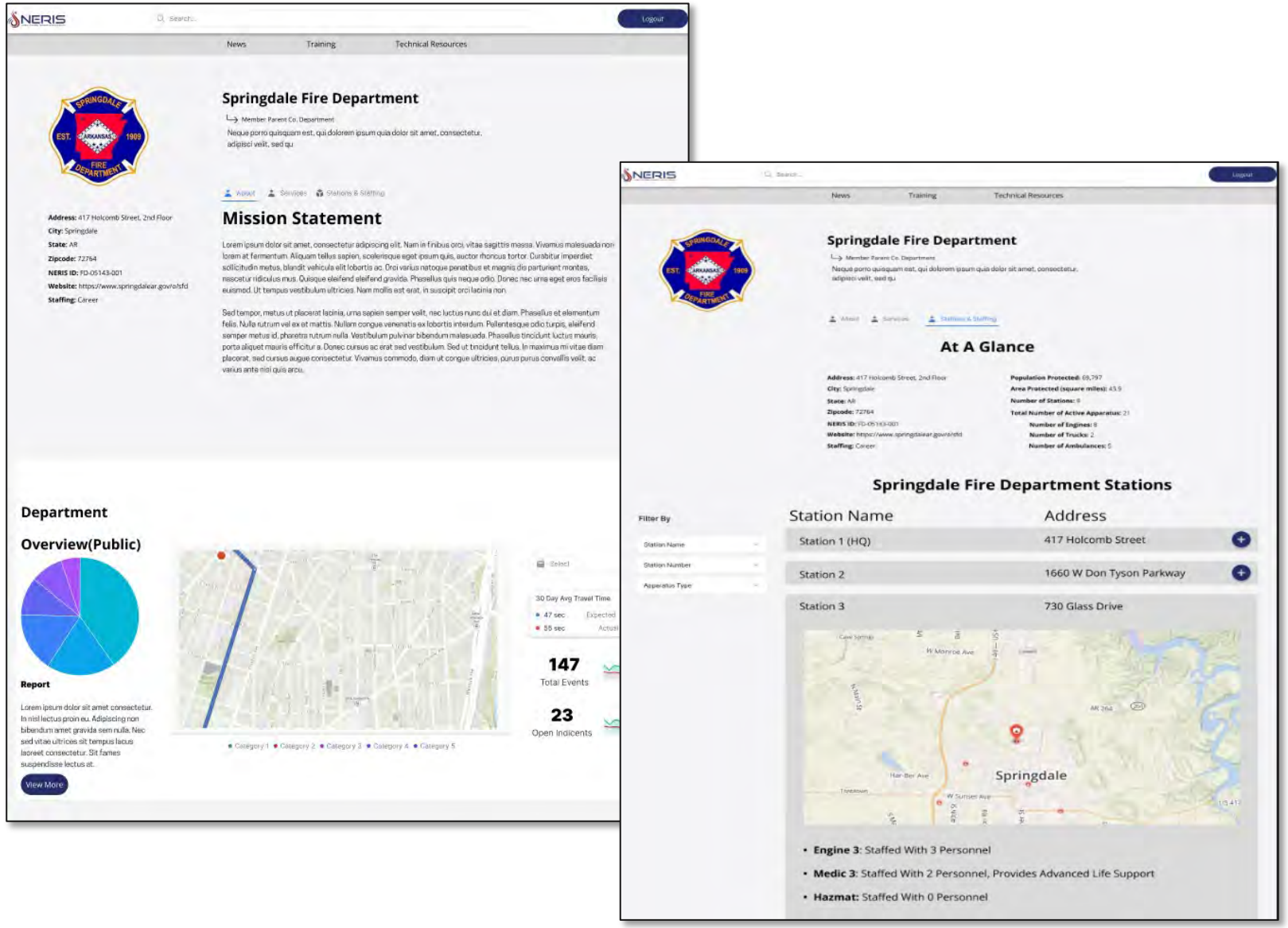
National Firefighter Registry

National Weather Data

Appropriate Data Exchange via Single and Bi-Directional APIs

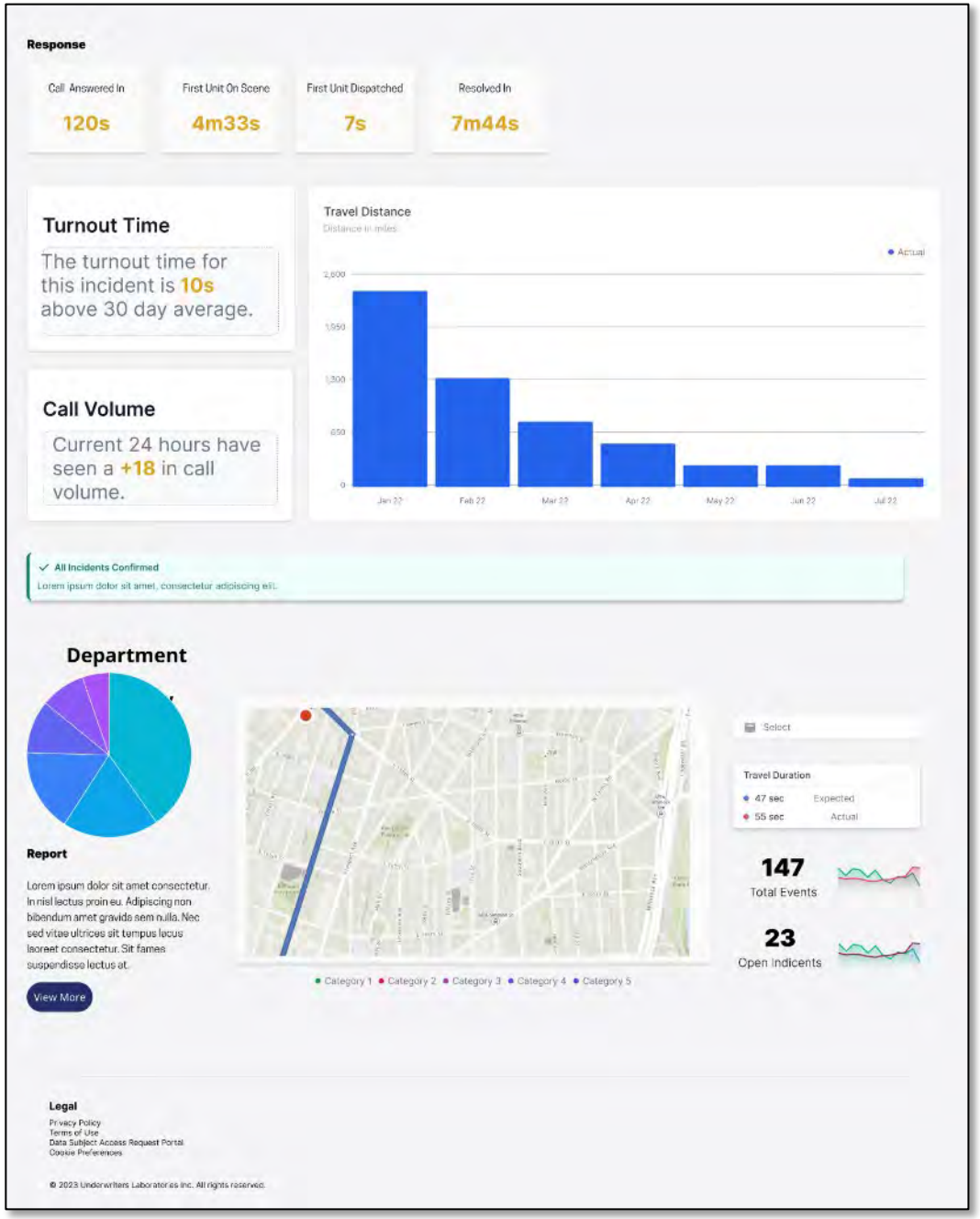
Department Information

- Each FD has their own landing page.
- Core information on FD operation, deployment, staffing, and other characteristics.
- Used to help all departments understand their effective response force, deployment and other metrics.



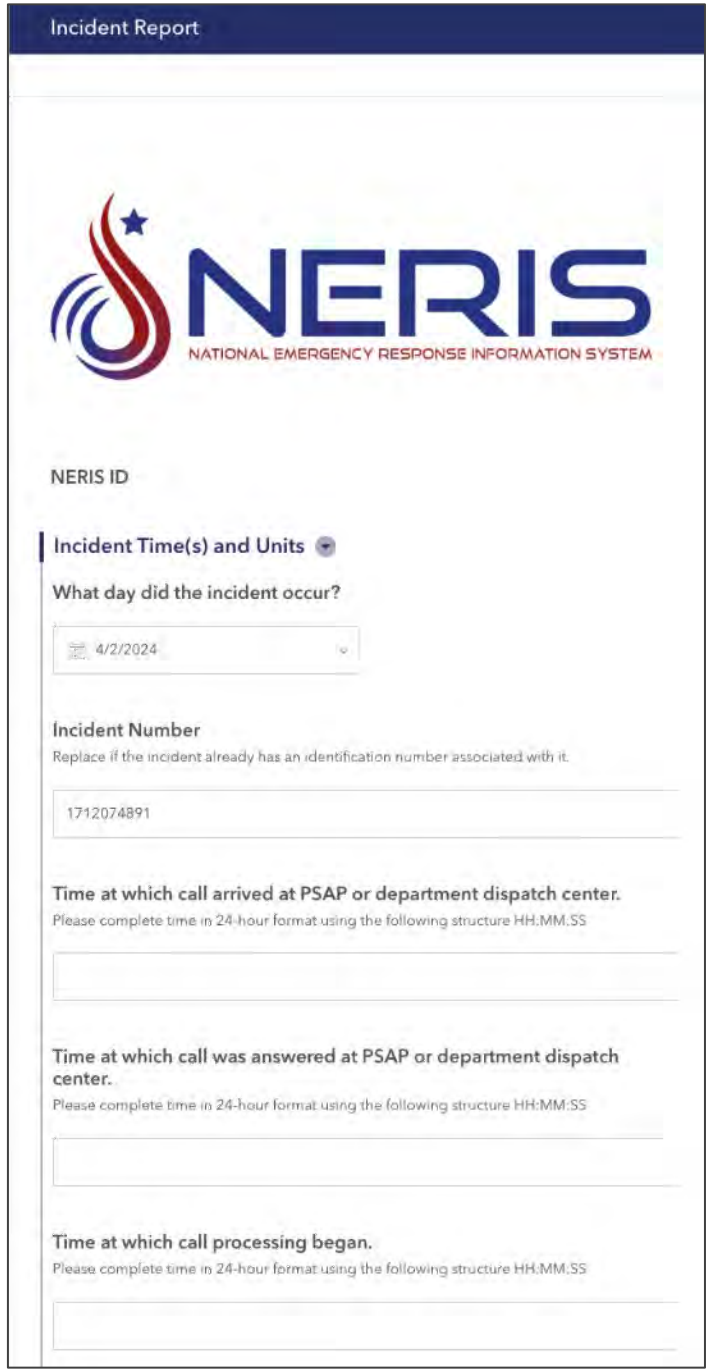
Incident Information

- Improved workflow and categorization for incident types
- Property information and other incident area information
- Metrics of significance (rescues, evacuations, etc.)
- Actions taken
- Tactical timestamps from CAD within the incident report
- Enhanced response time calculations



Prototype Testing Departments

	NERIS ID	Name
	FD05143511	Springdale Fire Department
	FD06059617	Orange County Fire Authority
	FD08059429	West Metro Fire Protection District
	FD42091529	Upper Merion Township Fire & Emergency Medical Service Department
	FD48085117	Frisco Fire Department
	FD51600329	Fairfax County Fire and Rescue Department



Prepare your Department for NERIS Onboarding

Identify

An individual from your FD to serve as the Lead in NERIS onboarding, training, and administration.

Know

Who your CAD and RMS vendors are, and their technical points of contact (POCs) to start talking about NERIS integration.

Determine

Fire department boundaries and talk with your GIS staff to prepare boundary data for inclusion in NERIS – e.g., RESTful service or file geodatabase.

Gather

Fire department-wide information on stations, services, and staffing information, hint – this is mostly the same data you'd gather for the Fire Department Registry.

NERIS Data Framework

NERIS' data policy and governance framework

- Local departments retain ownership over their data
- Appropriate data sharing by default within the NERIS platform

NERIS' semantic layer

- Common data definitions and descriptions (data dictionary)
- Data relationships mapping – ontology and metadata

NERIS data model – Cross-walks with applicable standards & National systems

- ANSI-approved NENA Standards: NG911 Data Model and Emergency Incident Data Object
- National Information Exchange Model (NIEM)
- National EMS Information System (NEMSIS)
- DOI's IRWIN and InFORM
- DOI Interagency Data Management Environment
- ATF's Bomb Arson Tracking System
- Fire Department Registry and FEMA GO

Entity/Organization Specification

- Fire department/emergency service agency profile information as basis for node.
- Must have, essential information for incident data/metrics, common terms, and definitions.

Phase I

Beta Version Release – May 2024

Dispatch/CAD and Incident Data Schemas

- Serves as base for the NERIS Incident Data App.
- API interface, standard formats and configuration for CADs/RMSs to feed APIs into NERIS.
- Primary data elements, standard data model.

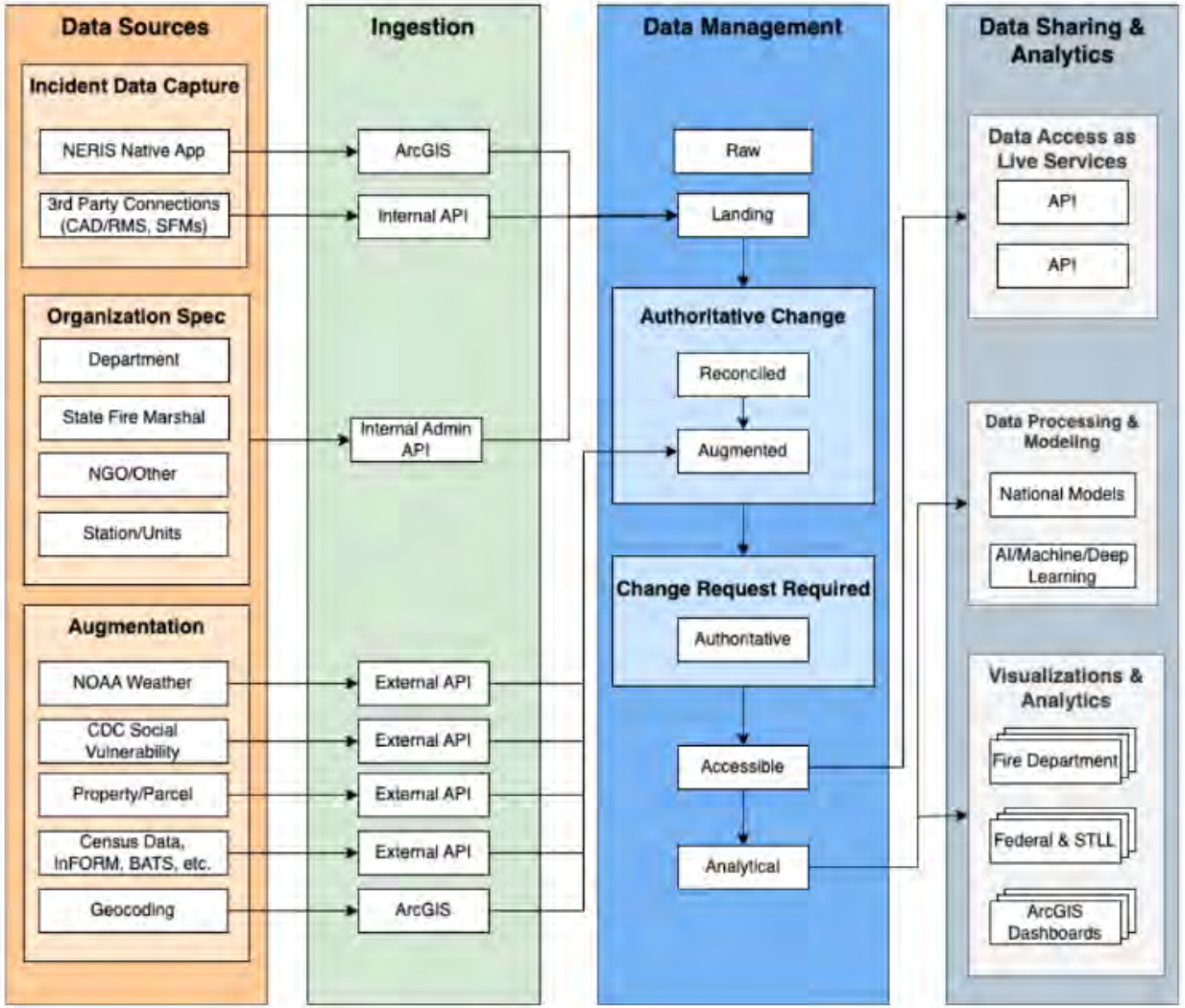
Phase II

Initial Drafts for National Engagement - Summer 2024

Investigation, Personnel Exposure, & Community Risk Reduction Data Schemas

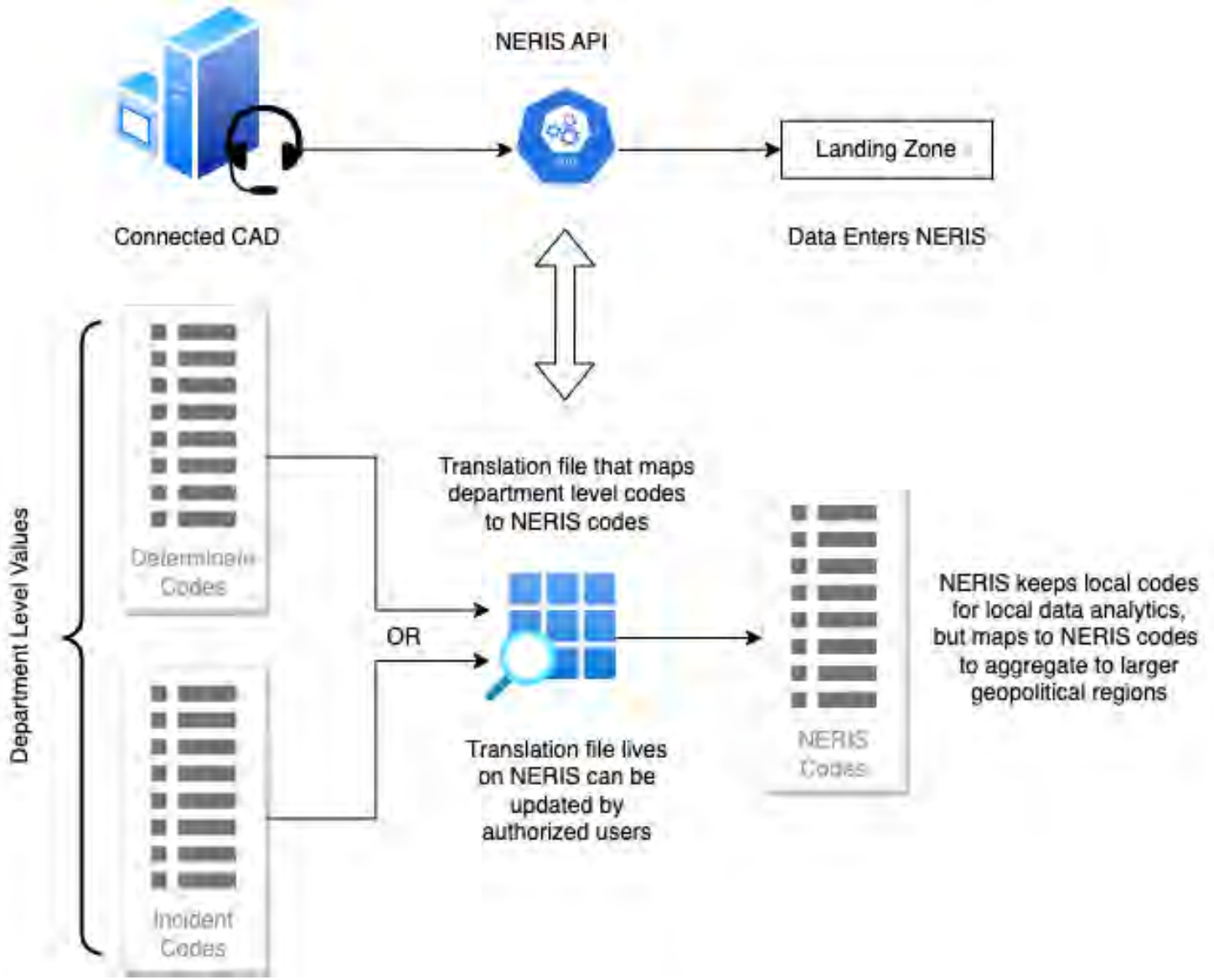
- Serves as base for the NERIS Modular Data Collection Apps.
- RMS and other software providers may apply these standard schemas to feed additional data to NERIS via APIs.

NERIS Data Management and Integration Environment

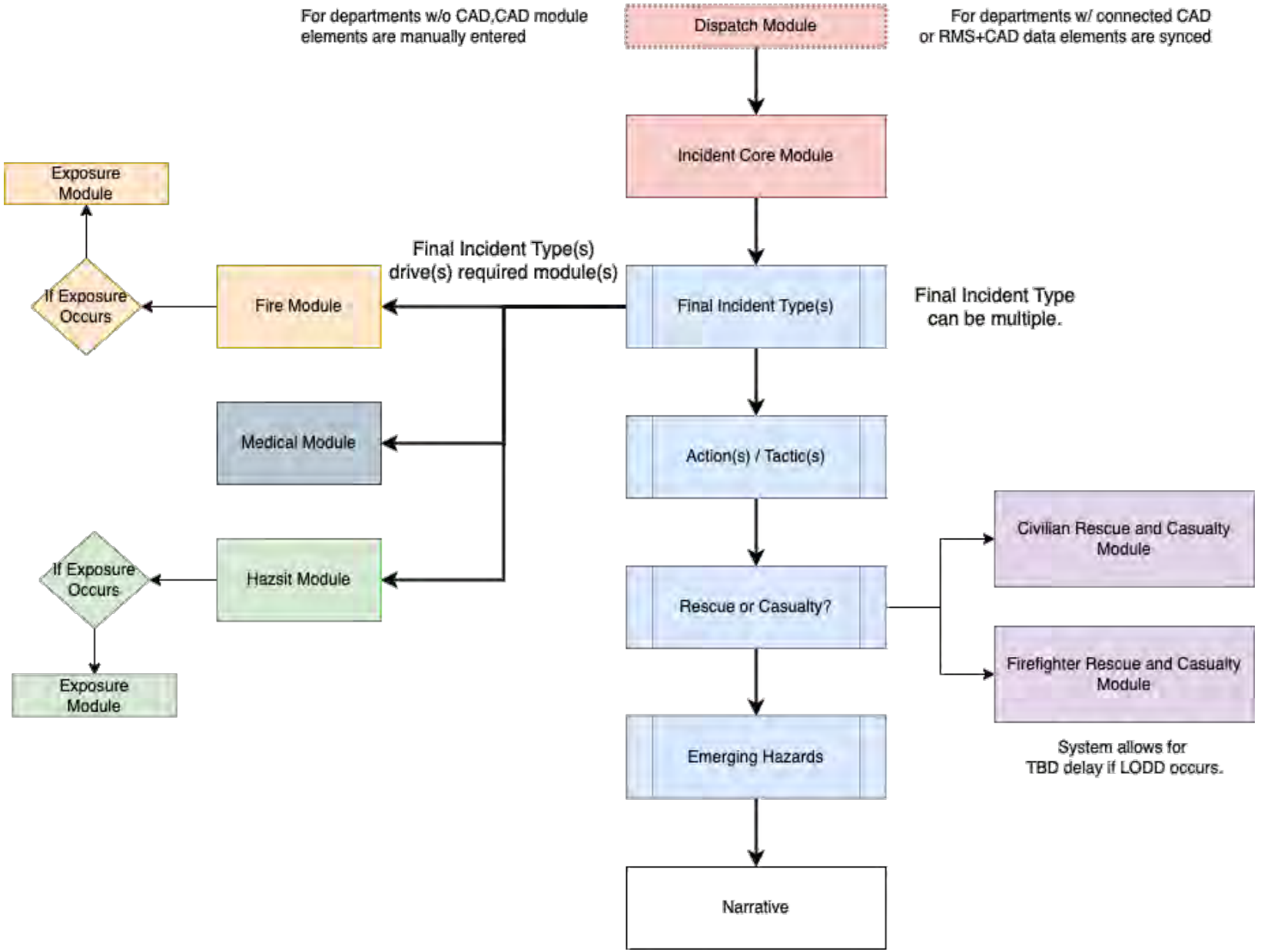


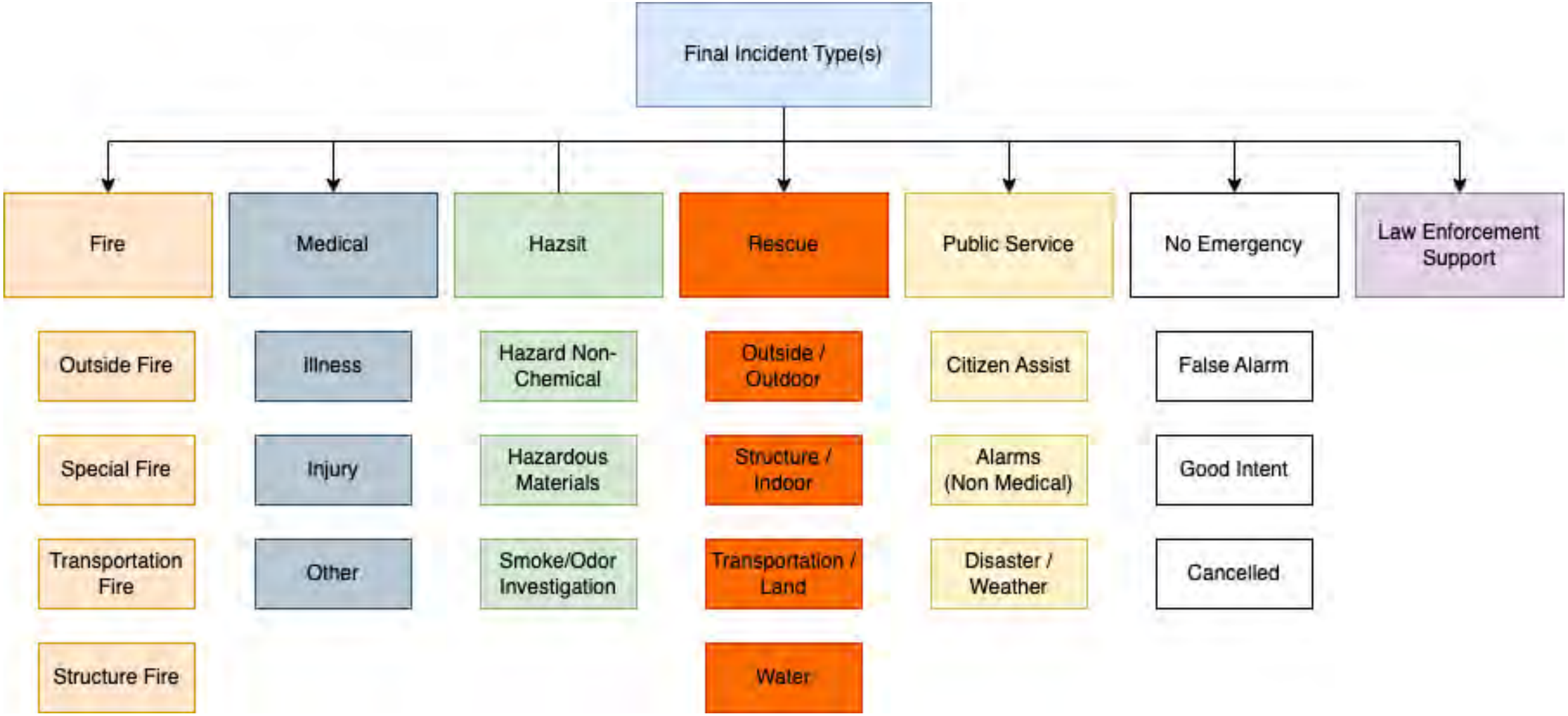
Dispatch/CAD Data Schema

- Set of required and recommended / optional data elements to pull from connected CAD systems
- Addressing fields follow **NG911** standards and cross walked to common geocoders
- API based approach – CAD systems can write directly to NERIS following the API guidance information provided with the release of the schema
- Maps local dispatch codes to NERIS codes via translation file



Incident Data Schema

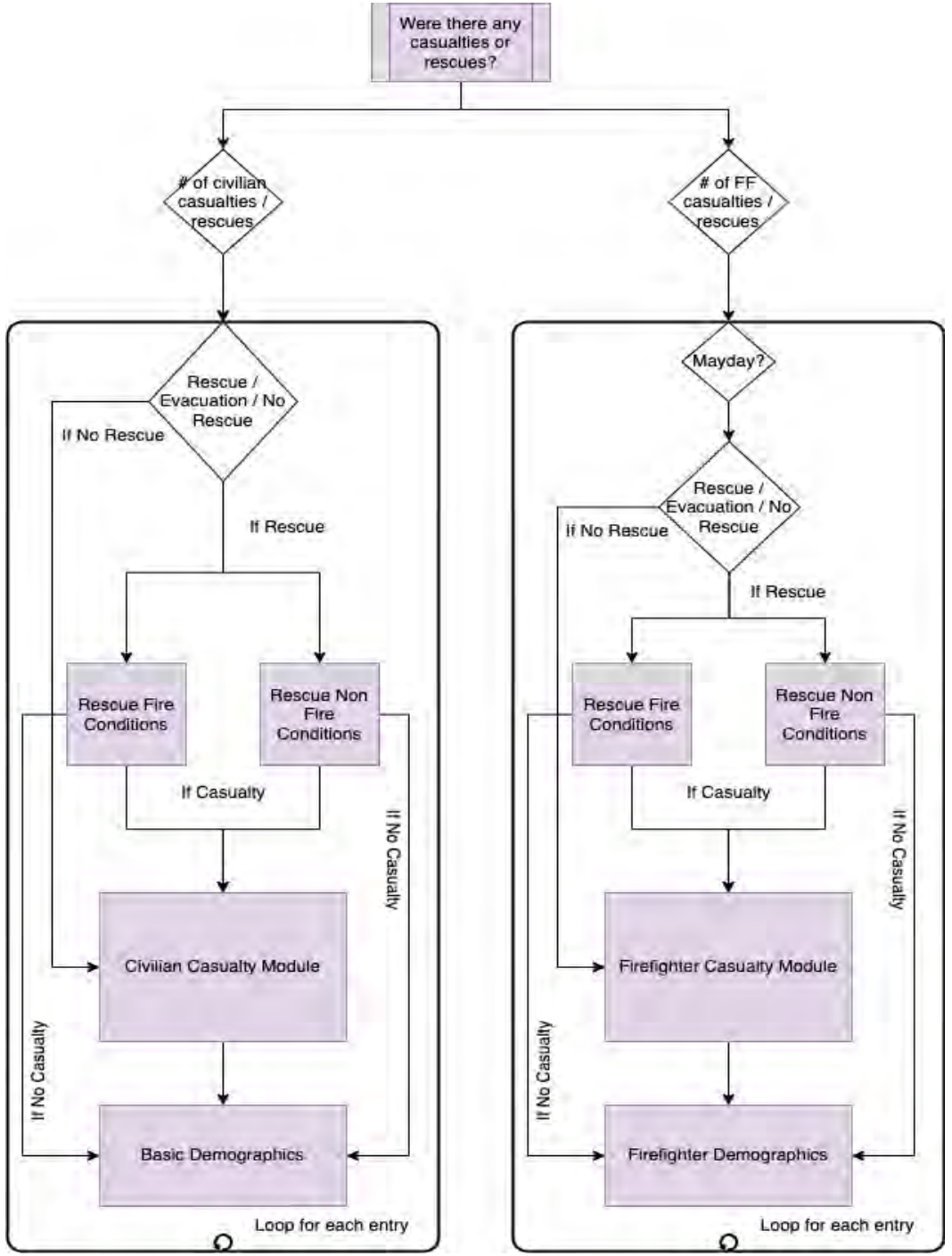




NFIRS historically limited incident type selection to only one incident type, whereas NERIS allows multiple types per incident.

Casualties and Rescues

- Can independently track rescues (self, nonfirefighter, firefighter) and casualties (nonfatal and fatal) in system.
- Firefighter and nonfirefighter are separate modules due do differences in causality module/demographic information.
- Can update records over time with changelog so can track if injury status changes.



Emerging Hazards

- Current focus is on lithium-ion batteries, photovoltaics, and corrugated stainless steel tubing (CSST)
  - **Driver**: these are current pressing hazards that need detailed data collection.
  - If for example the **CSST** hazard is reduced, then it no longer needs to be in module.

- System will "look" for anomalies as well as other sensing functions to ensure the module evolves with hazards.
  - Will also build out pathway for users to directly submit emerging hazards.

12-Month Timeline

	Status | Timeline
USFA and DHS S&T **establish partnership** for the core data standard and NERIS development with the Fire Safety Research Institute (FSRI).	100%
Community and stakeholder engagement, feedback opportunities, and listening sessions.	Ongoing
Complete **NERIS Prototype** and **onboard 6 fire departments** as testers & evaluators.	100% March 2024
Develop and release beta version of **NERIS core data standard schemas**.	95% May 2024
Launch beta version of NERIS and onboarding 50 departments as early adopters.	August 2024
Release NERIS v1 and launch phase 1 onboarding for fire departments.	November 2024

3-Year Timeline

CY 2024

- Release beta NERIS Core Data Schemas and Data Dictionary.
- Complete prototype testing & evaluation with 6 fire departments.
- **Launch beta version NERIS and onboard 50 departments.**
- Complete development and launch v1.0 of NERIS.
- **Launch phase 1 onboarding for fire departments nationwide.**

CY 2025

- Continue NERIS development via multiple software releases.
- **Complete Phase 2 and 3 onboarding for fire departments**.
- **Hybrid Reporting Year** – Some departments will report through either NERIS or legacy NFIRS.
- Complete planning and for decommissioning legacy NFIRS.

CY 2026

- **Effective Jan 1, 2026 – All incident reporting will occur through NERIS.**
- Continue NERIS development with via multiple software releases.
- Continue onboarding fire departments onto NERIS.
- Complete decommissioning legacy NFIRS system.

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NERIS
NATIONAL EMERGENCY RESPONSE INFORMATION SYSTEM

Links for More Information

NERIS Website: https://fsri.org/programs/neris

FAQs: https://www.usfa.fema.gov/nfirs/neris/about-neris

Contact: NERIS@ul.org

Science and Technology | U.S. Fire Administration | Fire Safety Research Institute

FEMA

U.S. Fire Administration

Q&A

03 | Wrap Up

PrepTech Talk Schedule:
Back To Our Roots

- June 2024: GIS for Fire Analysis
- August 2024: Public Safety GIS Symbology
- November 2024: Emergency Medical Service GIS

THANKS FOR JOINING US!

Do you have any questions?

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