# 2021 National Resource Management Summit: Key Findings and Action Plan

October 2021

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Produced by:

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# **Acknowledgments**

As emergencies affecting the nation grow in complexity and resources become increasingly constrained, communities rely more on mutual aid every day to meet resource requirements. Addressing national mutual aid issues and geospatial preparedness requires meaningful engagement of local, state, and national mutual aid stakeholders. The National Alliance for Public Safety GIS Foundation, the U.S. Department of Homeland Security's Science and Technology Directorate, and several components of the Federal Emergency Management Agency are grateful for the invaluable contributions of time and expertise that the following agencies and organizations provided in the 2021 National Resource Management Summit conducted virtually on April 14, 20, 21, 22, and 28.

#### Agency or Organization

All-Hazards Incident Management Team Association (AHIMTA)

Arizona Department of Emergency and Military Affairs

City of El Segundo Emergency Management Division (California)

Colorado Division of Homeland Security and Emergency Management

Crystal Public Works Department (Minnesota)

Cuyahoga County Office of Emergency Management (Ohio)

Florida Division of State Fire Marshal

International Association of Fire Chiefs

Iowa Department of Public Health

Kentucky Division of Emergency Management

Nashua Office of Emergency Management (New Hampshire)

National Emergency Management Association / Emergency Management Assistance Compact

Oregon Office of Emergency Management

Redmond Fire and Rescue (Oregon)

South Carolina Emergency Management Agency

Tennessee Emergency Management Agency

Vail Police Department (Colorado)

Wise County Emergency Management (Texas)



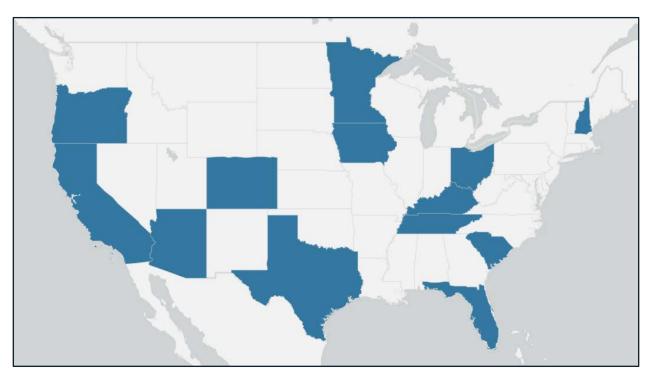


Figure 1: Geographical Range of Participation in NRMS 2021

NAPSG Foundation, DHS S&T, and FEMA appreciate the ongoing commitment by the public safety community as we work together to address key challenges and mature resource management and mutual aid coordination across the nation.



# **Executive Summary**

As communities nationwide face incidents of increased complexity and scope, they require resources from across agency and jurisdictional lines to save lives, stabilize the incident, and protect property and the environment. The National Incident Management System (NIMS) provides a consistent, nationwide template to enable partners across the Nation to prevent, protect against, respond to, recover from, and mitigate the effects of incidents. This includes resource management—the standard mechanisms to systematically manage resources, including personnel, equipment, supplies, teams, and facilities, both before and during incidents.

Technology systems underpin the execution of effective resource management. The Federal Emergency Management Agency (FEMA) provides and continues to develop a suite of webbased tools as part of the National Resource Hub to support organizations in implementing the resource management preparedness processes outlined in NIMS. To be effective, requirements for the National Resource Hub, or any technical solution for resource management preparedness, must be driven by the stakeholder community.

The National Resource Management Summit (NRMS)—co-hosted by FEMA, the U.S. Department of Homeland Security's Science and Technology Directorate (DHS S&T), and the National Alliance for Public Safety GIS (NAPSG) Foundation—provided an opportunity to collaborate with the community in defining mission-critical requirements for resource management preparedness technology and tools to maximize value and increase use among state, local, tribal, and territorial agencies, and other partners.

Based on the input from the community leaders engaged in NRMS, resource management preparedness technology can be advanced through the following functional areas and corresponding solutions:

#### **Resource Information Viewing and Sharing**

- Ensure Resource Owners Control Information
- Provide Clear Terms of Use
- Prioritized Resource and Personnel Attributes
- Ease Data Entry and Maintenance
- Properly Count Resources
- Advance Interoperability and Appropriate Data Sharing

#### **Resource Inventorying and Personnel Qualification Management**

- Facilitate the Transition from Preparedness to Response, Recovery, and Mitigation
- Address the Complete Resource Management Preparedness Process Through One System
- Accommodate Varied Organizational Structures
- Improve User Experience
- Provide Commitment, Outreach, and Training
- Ensure Local Control of Deployment Status
- Ease Management of Training Records

#### **Data Analytics and Visualization**

- Support Varied Analysis Capabilities
- Enable Specific Types of Analysis

Through ongoing collaboration and engagement, we can collectively address key challenges and mature resource management and mutual aid coordination across our nation. This report and the recommendations identified herein provide one step toward that solution.



# **Summit Overview**

The NRMS was an invitation-only meeting—co-hosted by FEMA, DHS S&T, and NAPSG Foundation—to define mission-critical requirements for resource management preparedness technology and tools. The NRMS was conducted virtually through a series of topic-specific modules held on April 14, 20, 21, 22, and 28 in 2021. The event brought together over 30 leaders representing federal, state, and local agencies and relevant non-governmental organizations (NGOs).

#### Goal

Collaborate with the community in defining mission-critical requirements for resource management preparedness technology and tools that will maximize value and increase use among the state, local, tribal, and territorial agencies, and other partners.

# **Objectives**

To accomplish the goal, the summit was structured around the following three objectives:

- Define mission-critical requirements for resource management technology capabilities that increase value and achieve efficiencies for the community.
- Define common business rules and procedures around resource information viewing and sharing that can be applied across organizations nationwide.
- Define optimal workflows for resource inventorying and personnel qualifications management, streamlining the process for the community while maintaining alignment with NIMS and the National Qualifications System (NQS).

# **Outcomes**

The following outcomes were targeted for the summit:

- NRMS participants will expand their knowledge around how to use, implement, and integrate the existing suite of resource management tools that FEMA provides to the community at no cost through the National Resource Hub.
- NRMS participants directly inform and shape the strategic and technical development of a suite of resource management tools, thereby ensuring that requirements for National Resource Hub functionality are driven by and for the community and represent a national all-hazards perspective.
- Through the NRMS, practical requirements and solutions will be identified to overcome current and emerging challenges in standardizing the viewing and sharing of resource information across organizations.



# **Approach**

NRMS 2021 was conducted as a virtual workshop series and in an adapted format to optimize virtual participation. Participants were selected for inclusion in particular modules based on their unique areas of expertise, and no single participant was asked to participate in all modules.

Module	Duration	Virtual Format	Date
Pre-Summit Video Seminar	45-min	On-Demand Video	Available: April 12
Module 1: Business and Policy Rules for Viewing and Sharing Resource Information	2 hours	Live Inter- Disciplinary Seminar	April 14 1:00-3:00pm EST
Pre-Module 2 Video Seminar: Optimizing Resource Inventorying and Personnel Qualifications Management Workflows	30-min	On-Demand Video	Available: April 12
Module 2 Part A: Optimizing Resource Inventorying Workflows	2 hours	Live Inter- Disciplinary Seminar	April 20 1:00-3:00pm EST
Module 2 Part B: Optimizing Personnel Qualifications Workflows	1.5 hours	Live Inter- Disciplinary Seminar	April 21 1:00-2:30pm EST
Module 2 Part C: Integrating Resource Inventorying and Personnel Qualifications & Credentialing Workflows	1.5 hours	Live Inter- Disciplinary Seminar	April 22 1:00-2:30pm EST
Module 3: Resource Management Data Analytics & Visualization	2 hours	Live Inter- Disciplinary Seminar	April 28 1:00-3:00pm EST



# **Resource Management Context and Landscape**

NIMS outlines a common, interoperable approach to sharing resources, coordinating and managing incidents, and communicating information. An essential element of sharing resources is resource management—the standard mechanisms to systematically manage resources, including personnel, equipment, supplies, teams, and facilities, both before and during incidents in order to allow organizations to more effectively share resources when needed.

NIMS guidance identifies four resource management preparedness processes, identified below.

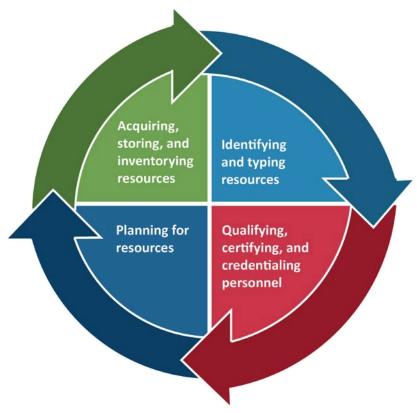


Figure 2: Resource Management Preparedness Processes

Resource management preparedness should build on activities that organizations and jurisdictions are already implementing. Additionally, by applying these resource management processes, the mutual aid process—a mechanism for quickly obtaining assistance in the form of personnel, equipment, materials, and other associated services—can function as a seamless continuation of resource management to support incident operations.



At the time of NRMS 2021, four of the <u>NIMS Implementation Objectives for Local, State, Tribal, and Territorial Jurisdictions</u>—which aim to promote consistency in NIMS implementation across the Nation—are focused on resource management practices.

Identify and inventory deployable incident resources consistent with national NIMS resource typing definitions and job titles/position qualifications, available through the Resource Typing Library Tool.

Adopt NIMS terminology for the qualification, certification, and credentialing of incident personnel.

Use the NIMS Resource Management Process during incidents (identify requirements, order and acquire, mobilize, track and report, demobilize, reimburse and restock). At the jurisdictional level, develop, maintain, and implement mutual aid agreements (to include agreements with the private sector and nongovernmental organizations).



To support the whole community in implementing resource management, FEMA provides the National Resource Hub. The National Resource Hub is a suite of webbased tools that supports a consistent approach for the resource management preparedness process and serves as a nocost solution for all state, local, tribal, and territorial government agencies and NGOs. Systems include the Resource Typing Library Tool (RTLT), Resource Inventory System (RIS), and OneResponder (a personnel qualifications and credentialing management system).



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# **Key Findings**

Summit participants identified challenges and solutions in three key areas of resource management preparedness technology and tools:

- 1. Resource Information Viewing and Sharing,
- 2. Resource Inventorying and Personnel Qualification Management, and
- 3. Data Analytics and Visualization.

Discussion during each module centered around the National Resource Hub, its current capabilities, and future requirements. However, the findings surfaced during the summit are not exclusive to the National Resource Hub tools or specific software. These findings reflect the current posture and needs of the public safety community regarding resource management preparedness technology and tools, regardless of the specific software used to meet those needs.

# **Key Area 1: Resource Information Viewing and Sharing**

Participants identified the following issues, concerns, and requirements in viewing and sharing resource management information for mutual aid.

#### **Ensure Resource Owners Control Information**

Each resource is owned or managed by an agency, company, person, or other entity. Information about that resource must only be made visible to other individuals if the resource owner decides to make it visible. Control over both resources and resource information should remain with the authority having jurisdiction (AHJ).

Controlling visibility to resource information also involves providing features that allow that information to be properly shared. Each organization within the National Resource Hub needs the ability to share a continuous service or feed of that organization's resource and personnel inventory to allow that information to be used in other tools and applications at the discretion of the resource owner. Organizations commit a significant amount of time and resources in adopting and utilizing a piece of inventorying technology. Additionally, many organizations already have systems that they use for situational awareness and incident management. Allowing resource management data within the National Resource Hub to be used in multiple ways—to include being consumed within an organization's other operational systems—through a live service or feed. This provides significant increased value to the users, and potential savings in staff time and cost to stakeholder organizations.

In RIS today, an organization is able to export their resource and personnel inventory in static formats such as CSV and KML. The current capability does not meet the needs defined by the stakeholders that would enable them to apply and use their resource and personnel inventory data to support other workflows such as resource allocation planning, capability estimation, and pre-scripted mission planning.

Further, specific requirements were also defined for the formats that the live data feeds need to be in. Stakeholders indicated that their data be made available in an Esricompatible live data feed, most commonly referred to as an ArcGIS/AGOL Feature Service.



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Other standard and interoperable live data formats and application programming interfaces (APIs) should also be considered.

#### Provide Clear Terms of Use

Terms of Use outline a system user's rights and responsibilities, rules of behavior, and sets expectations on the usage of the system and any associated data. The National Resource Hub must provide clear and readily accessible Terms of Use that explain the way in which resource information and data is expected to be used, including how it may be made viewable to others or shared with other organizations. The Terms of Use may be used to inform users of the importance, purpose, and benefits of making their data viewable.

#### **Prioritized Resource and Personnel Attributes**

Resource and personnel inventory records include a number of pertinent details about a given resource, not all of which are appropriate or useful to be viewed outside the owner organization. Stakeholders identified a list of key resource and personnel attributes that are critical to using and applying inventory data in operations. If a resource is made viewable to other organizations, the following specific attributes about that resource are appropriate to make viewable to vetted organizations:

#### **Resource Inventory Attributes**

- Status
- Resource Type (consider providing a hyperlink to further information about the type)
- Category
- Kind
- Organization
- Home Location (resource level)
- 24/7 Organization Point of Contact

#### **Personnel Qualifications Attributes**

- Job Title
- Resource Type (consider providing a hyperlink to further information about the type)
- Category
- Kind (i.e., Personnel)
- Qualified/Trainee Status
- Home Organization
- Home Organization Location
- Point of Contact/Supervisor



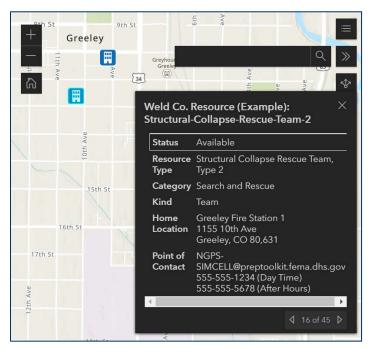


Figure 3: Example of the Implementation of Shared Resource Fields within a Pop-Up Display on a Map

#### Ease Data Entry and Maintenance

In order for a system to be useful for preparedness planning, the data within it must be current, accurate, and sufficiently detailed. Technology should be built that makes data entry and maintenance easy and eliminates redundant data entry of the same information in multiple systems. The ability for technology to prompt users to update data within certain date parameters would be beneficial.

# **Properly Count Resources**

Resources can easily be double- and triple-counted, particularly as resource information across multiple systems and organizations is combined or aggregated. The National Resource Hub can mitigate this issue within the resource management preparedness technology space by serving as the primary source for authoritative unique identifiers for resources and personnel across multiple systems.

FEMA should work with the community to establish an authoritative source for the generation of unique identifiers for resources and personnel for use across systems and levels of government to eliminate the persistent issue of double- and triple-counted resources and personnel. This will require a policy-level decision first that can then be supported by technology.

# Advance Interoperability and Appropriate Data Sharing

Efforts to develop resource management preparedness technology and tools must focus on advancing interoperability and promoting appropriate information sharing or viewing among systems and organizations.



#### 2021 National Resource Management Summit | Key Findings and Action Plan

The following types of third-party systems would be useful to connect to the National Resource Hub:

- Asset and inventory management systems
- Qualifications management systems
- Incident and deployment management systems
- Situational awareness systems
- Mutual Aid coordination systems



# **Key Area 2: Resource Inventorying and Personnel Qualification Management**

Participants identified the following ways in which resource inventorying and qualifications management workflows can be improved and streamlined to ease adoption and use.

# Facilitate the Transition from Preparedness to Response, Recovery, and Mitigation

NIMS guidance delineates resource management preparedness processes from the resource management process during an incident. The National Resource Hub and its suite of web-based tools are built to address resource management preparedness activities and are not designed to be used during response to an incident.

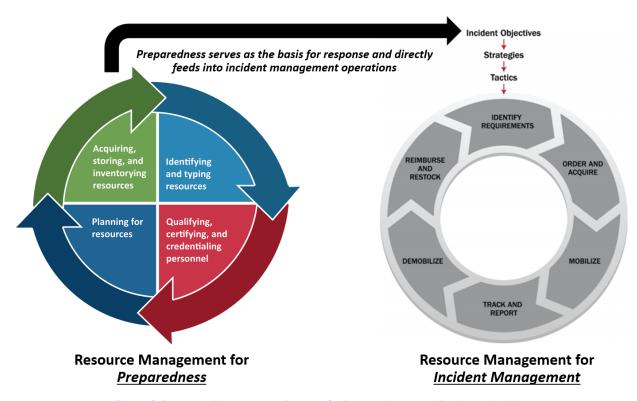


Figure 4: Resource Management Process for Preparedness and During an Incident

However, to be successful, preparedness activities must be able to quickly pivot to response, recovery, and mitigation activities. The ability to transition from preparedness into response is particularly critical due to the time sensitivities surrounding response operations. While the National Resource Hub is designed to be a preparedness system, efforts should be made to complement response operations. This includes, but is not limited to, reviewing and modifying resource inventory data fields so that the data can be more useful in deployment and other response systems when consumed through data services and/or feeds.



# Address the Complete Resource Management Preparedness Process Through One System

Capability planning includes identifying resource requirements based on threats to, and vulnerabilities of, the jurisdiction or organization. To plan for resources, organizations estimate their current capabilities, assess their resource management gaps, establish resource management planning priorities, and utilize mutual aid agreements to address those gaps. A core question in capability planning is, "What resources do we have that allow us to achieve our targets?"

Prior to utilizing a resource inventory for mutual aid purposes, an organization should first use that resource inventory to determine their capacity and capability to address an incident within their area. This should be treated as a goal for the National Resource Hub.

The four resource management preparedness processes identified within NIMS guidance—including planning for resources discussed above—build upon and integrate with other activities that organizations and jurisdictions are implementing. The National Resource Hub should connect with these other integrated processes, where appropriate. As an example, incorporating the FEMA Public Assistance (PA) cost codes or FEMA Schedule of Equipment Rates as a field in a resource record could help streamline the reimbursement process.

## **Accommodate Varied Organizational Structures**

Public safety agencies and organizations vary in their organizational structure, hierarchy, and approach to management and oversight. As such, technology that supports these agencies and organizations must allow for flexibility within the way an organization's data is organized, managed, and rolled-up. This flexibility must be balanced with the need for standardization and consistency within a given system.

# Improve User Experience

A clean and simple user interface paired with appropriate system features can foster adoption of a system. Robust search capabilities, to include keyword search, should be provided to allow users to quickly find needed resources, resource types, and position qualifications. Implementing a similar user interface across the National Resource Hub suite of systems—similar ordering of buttons, symbology, terminology, data sets, descriptions, etc.—would allow individuals to more easily transition between the use of each system. Providing an easy means of requesting support is also important.

Resource management preparedness technology should allow users to capture detail about a resource's capabilities when inventorying the resource. Additionally, the technology should provide resource capability filtering options to aid users in finding and analyzing available resources.

# Provide Commitment, Outreach, and Training

Adopting a new piece of technology—to include training staff and entering data—requires a commitment of time and resources. In order for the stakeholder community to adopt a new system and invest time and resources into its use, they must be aware of and have



confidence in FEMA's commitment to maintaining that system. Stakeholders amplified this requirement during NRMS, urging FEMA to make a statement about their long-term commitment to enhancing and maintaining the suite of tools that comprise the National Resource Hub.

Providing increased training and outreach on resource inventorying practices and qualifications management will foster adoption and daily use of the National Resource Hub. By encouraging adoption, organizations nationwide will build a solid set of data to utilize for planning and preparedness purposes.

# **Ensure Local Control of Deployment Status**

Some individuals who are registered within the National Resource Hub's personnel qualifications management system may be qualified to serve in a specific position but may not be deployable outside their home jurisdiction or authority having jurisdiction. The National Resource Hub should accommodate this situation. Status information for both resources and personnel is already part of RIS but is not yet part of the personnel qualifications management system. By including status information for personnel in the qualifications management system, managers and supervisors can maintain status information regarding the availability of personnel resources to be deployed within or outside their home jurisdiction or authority having jurisdiction.

## Ease Management of Training Records

Training is essential to ensure that public safety personnel possess the required skills to effectively perform their jobs. Renewal schedules for various certifications do not align, despite potential overlap in the required training for those certifications. Tracking training records and timelines within an organization can be tedious and time-consuming. The National Resource Hub, specifically OneResponder, should provide users with the ability to track and manage training, continuing education, and associated documentation, to include notifications when training expiration dates are approaching.

Additionally, options for consuming training records directly from federal training entities such as FEMA's Emergency Management Institute (EMI) and the Center for Domestic Preparedness (CDP) should be explored. Specifically, the course completion records from FEMA-provided training that are stored in FEMA's training records system should be connected to OneResponder and populated at the individual responder-level. This would ensure OneResponder contains the latest and most accurate FEMA-related training records available for the individual responder, thereby also reducing manual data entry.



# **Key Area 3: Data Analytics and Visualization**

Participants identified the following resource management data analytics and visualization features that would support their needs and provide added value to the community.

## Support Varied Analysis Capabilities

An agency's or organization's capabilities to conduct data analysis and glean actionable information vary greatly at the local and state levels nationwide. Some agencies have limited analysis capabilities and are reliant on a system's default reporting capabilities. At the other end of the spectrum are agencies with robust analysis capabilities that consume data into third-party applications to generate customized dashboards, common operating pictures, and dynamic reports. The National Resource Hub should be developed to support organizations across the full analysis capability spectrum—providing both self-service, dynamically-generated dashboards and reports as well as providing secure data feeds for third-party applications for the purpose of unique data analysis.



Figure 5: Analysis Capability Spectrum

# **Enable Specific Types of Analysis**

Limited: Dynamically generated

dashboards & reports

Resource inventory and personnel qualification information can provide critical insight to answer a variety of public safety questions, particularly when that information is paired with other data. The following enhancements to the National Resource Hub would better enable the data within it to be analyzed and inform decision-making.

- Provide the capability for resource inventory and personnel qualification information to be viewed in the context of a community's hazard exposure, risks, and sociodemographic variables.
- Enable an organization to use resource inventory and personnel qualification information to identify training gaps, trends, and priorities for a designated area.
- Allow the funding source and purchase date for a resource to be captured and associated with the inventory record. This can aid an organization in planning for scheduled equipment maintenance and in identifying resources that have been purchased through a specific grant or funding source for a particular year for reporting and planning purposes.



 Provide the ability to visualize the distance to available resources from a given location. This capability would aid planners in analyzing available resources and better identify appropriate resources to fill capability gaps.

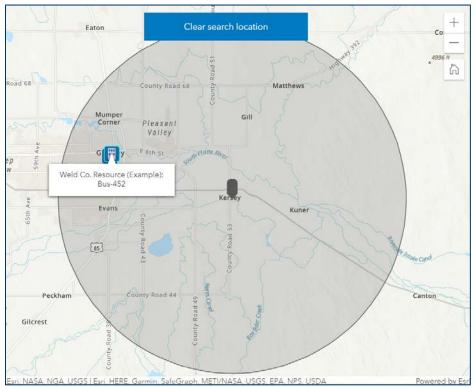


Figure 6: Notional Application Depicting Available Resources within a Given Distance



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# **Action Plan**

While the challenges and solutions surfaced by stakeholders during NRMS 2021 are not exclusive to a particular tool or specific software, the key findings may be used to inform next steps in the development of the National Resource Hub and NIMS guidance and offerings. Based on the key findings outlined above, the following requirements have been identified for the National Resource Hub suite of systems. While identifying a specific timeline for each of these requirements is outside the purview of the NRMS and this report, the requirements have been categorized into short-term and long-term items. Short-term items are in a planning phase and are expected to be addressed or be scheduled for development within the next 12 months, approximately.

Contain (a)	Demiliane	Time of Control
System(s)	Requirement	Time Span
All	Provide additional guidance, training, outreach, and support on resource inventorying and personnel qualifications	Short-Term
	management.	
All	Improve search capabilities by enabling keyword search.	Short-Term
OneResponder, RIS	Update Terms & Conditions within OneResponder and RIS to clearly explain the way in which resource information and data is expected to be used, including how it may be made viewable to others.	Short-Term
OneResponder, RIS	Implement a limited variety of organizational hierarchies and management options to accommodate the varied structures of the organizations utilizing the systems.	Short-Term
OneResponder, RIS	Link resource type and personnel qualification names back to the full definition or qualification within RTLT.	Short-Term
OneResponder, RIS	Collaborate with response entities to identify ways in which preparedness data from OneResponder and RIS may more easily transition to and be utilized within response operations.	Short-Term
OneResponder	Partner with the National Emergency Training Center (NETC) to populate personnel training records.	Short-Term
OneResponder	Provide the following minimal set of data when information about a resource is shared: Job Title, Resource Type (consider providing a hyperlink to further information about the type), Category, Kind (i.e., Personnel), Qualified/Trainee Status, Home Organization, Home Organization Location, Point of Contact/Supervisor.	Short-Term
RIS	Provide the following minimal set of data when information about a resource is shared: Status, Resource Type (consider providing a hyperlink to further information about the type), Category, Kind, Organization, Home Location (resource level), 24/7 Organization Point of Contact.	Short-Term
All	Use consistent buttons, symbols, terminology, descriptions, etc. among systems within the National Resource Hub.	Long-Term
OneResponder, RIS	Provide basic dynamically generated, self-service data analysis products that can be easily run by any user.	Long-Term
OneResponder, RIS	Provide moderate-to-advanced data analytics and visualization tools to allow technical users to conduct analysis on their data.	Long-Term



System(s)	Requirement	Time Span
OneResponder, RIS	Identify national-level priority third-party systems with which to connect. Initial candidates are the Emergency Management Assistance Compact (EMAC) systems, the National Wildfire Coordinating Group's (NWCG's) Interagency Resource Ordering Capability (IROC), and FEMA's training and education record systems.	Long-Term
OneResponder, RIS	Develop a unique identifier schema for resources and personnel. Develop workflow and methodology to apply unique identifiers across multiple systems to prevent multiple counting of resources.	Long-Term
OneResponder	Allow managers and supervisors to maintain status information regarding the availability of personnel resources to be deployed within or outside their home jurisdiction.	Long-Term
OneResponder	Provide the capability to send a notification in advance of a training record's expiration date.	Long-Term
RIS	Provide an additional sub-menu under the Resources tab for each of the following kinds of resources: Equipment, Teams, Personnel, Facilities, Supplies.	Long-Term
RIS	Provide the capability for a live service or feed of each organization's resource inventory and list of personnel with qualification status information to be generated and shared to allow that information to be used in other applications at the discretion of the resource owner.	Long-Term
RTLT	Associate applicable resources with FEMA Public Assistance (PA) cost codes to aid in the reimbursement process	Long-Term

