



International Forum to Advance
FIRST RESPONDER INNOVATION

**Recommended Method
for
National Capability Gap
Identification and Prioritization**

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Table of Contents

Background	3
National Capability Gap Identification and Prioritization Method	3
Step 1: Prepare for capability gap identification, validation, and prioritization	3
Methodology Development and Customization	3
First Responder Engagement	4
Scenario Review and Customization	4
Step 2: Identify capability gaps	5
Step 3: Validate capability gaps	5
Step 4: Prioritize capability gaps	6
Appendix A.....	8
Appendix B.....	9
Example First Responder Operating Scenario: Active Shooter.....	9
Example First Responder Operating Scenario: Public Order (Planned)	10
Example First Responder Operating Scenario: Public Order (Spontaneous).....	11
Example First Responder Operating Scenario: Structure Fire	12
Example First Responder Operating Scenario: Natural Disaster (Earthquake)	13
Appendix C.....	14
Appendix D	15

Background

The International Forum to Advance First Responder Innovation (IFAFRI) is an organization of government leaders from 13 countries and the European Commission, focused on enhancing and expanding the development of new technology for first responders worldwide. IFAFRI does this, in part, by working with the global first responder community to define a list of common, high priority capability gaps. The first step is for IFAFRI member nations to identify a set of prioritized national capability gaps based on their specific needs. After member nations develop their country-specific lists, the IFAFRI Capability Gap Committee reviews and integrates the lists to identify common gaps. This document contains a method that IFAFRI member nations may use to identify the capability gaps faced by responders within their country. It will allow the Capability Gaps Committee to objectively accomplish its task of recommending additional gaps for inclusion in the list of common global gaps.

The method described in this document is presented as one suggested process for identifying national emergency response capability gaps. It is not a requirement for member nations to use this method, but recommended for use by those that do not already have a method in place for identifying and prioritizing national capability gaps.

The IFAFRI Program Management Office (PMO) will collect each national list on behalf of the Capability Gaps Committee, and will work with this committee to draft a recommended update to the IFAFRI's list of *Common Global Capability Gaps*. This recommended list will be presented to the IFAFRI membership for consensus.

National Capability Gap Identification and Prioritization Method

The following section presents the four steps of the National Capability Gap Identification and Prioritization Method.



Figure 1: Steps of the National Capability Gap Identification and Prioritization Method

Step 1: Prepare for capability gap identification, validation, and prioritization

The first step of the National Capability Gap Identification and Prioritization Method is to prepare for the identification, validation and prioritization of first responder capability gaps. During this step, IFAFRI member nations will develop their country-specific methodology document, review operational scenarios, and establish a first responder group to provide subject matter expertise.

Methodology Development and Customization

IFAFRI member nations are encouraged to review the steps presented here and develop a document that describes their methodology in further detail. Member nations may need to customize their method to meet country-specific needs, organizational structures, or process requirements.

First Responder Engagement

In order to identify, validate, and prioritize capability gaps, it is important to draw on first responder knowledge and experience. The method assumes that each member nation will be capable of assembling first responders from law enforcement, fire services, and emergency medical services, as a group or by individual disciplines. Nations may include other non-traditional responders (e.g., public health, border security) in accordance with their national priorities, incidents, and threats. It is important to consider the diversity of first responders in the selection of participants in order to generate results that are more representative of different first responder needs across a particular nation. For the purposes of the National Capability Gap Identification and Prioritization Method, diversity includes, but is not limited to, first responder discipline, agency response capabilities, environmental conditions, and jurisdiction size, measured by both population and land area. The responders will be asked to provide input and advice based on their experience and expertise. The Capability Gaps Committee will provide advice and support to member nations regarding the identification of first responders and determination of the best approach for responder engagement.

Scenario Review and Customization

Example scenarios are provided to facilitate a consistent method for capability gap identification and prioritization across the IFAFRI member nations. The use of scenarios allows participants to explore capability gaps across multiple operational environments and incident types. Suggested scenarios represent a small selection of possible emergency response incidents.

Brief summaries of the scenarios are presented below and further description of these example first responder operating scenarios is provided in Appendix B of this document. Accompanying prompt questions for the example scenarios are provided in Appendix C of this document.

Active Shooter: *This scenario involves the response to an active shooter incident.* In this scenario, an armed individual is reported active on government property in the center of a metropolitan area.

Public Order: *This scenario involves the response to a public order incident, either pre-planned or spontaneous.* In this scenario, multiple (50+) civilians are mobile and obstructing streets in a metropolitan area.

Structure Fire: *This scenario involves the response to a structure fire incident.* In this scenario, a fire is reported at a chemical and waste facility within an industrial complex that is in close proximity to residential infrastructure.

Natural Disaster: *This scenario involves the response to a natural disaster incident.* In this scenario, a mid-sized community is located at the epicenter of an earthquake. The effects of the earthquake result in added threats and hazards to the community.

In Step 1, member nations are encouraged to review the scenarios provided. The IFAFRI Capability Gaps Committee encourages the use of these four scenarios to help facilitate the assessment of common needs. However, it may be appropriate for a member nation to use additional or alternative scenarios that more closely align with their common national threats and incidents. For example, a country that experiences significant flooding events may choose to substitute that scenario for the earthquake described in the natural disaster incident. Member nations may change the provided scenarios or develop new scenarios as best fits their needs.

Step 2: Identify capability gaps

The second step of the National Capability Gap Identification and Prioritization Method is to identify capability gaps based on responder review of the scenarios. Identification of capability gaps can be done in a focus group or workshop setting. For each scenario, responders should be asked about current and needed capabilities to perform their mission. When possible, responders should provide operational parameters or requirements (e.g., size or weight limitations, power supply requirements) when discussing capability gaps. As a complement to engagement with responders via focus groups and workshops, relevant data and information for each scenario also can be gathered by analyzing statistics, after action reports, exercise data and outcomes, and other related research and studies.

This method recommends the use of the categories listed on the right during gap identification activities. Appendix C contains questions that can be used to prompt questions about capability gaps in each of these categories. At the conclusion of the capability gap identification, member nations should review the gaps to eliminate redundancies and combine like gaps when appropriate. This process will result in a set of draft capability gaps that can be formatted and validated.

Capability Gap Assessment Categories
Situational Awareness
Communications & Information Sharing
Command, Control, & Coordination
Responder Health & Safety
Logistics & Resource Management
Casualty Management
Training & Exercise
Risk Assessment & Planning
Intelligence & Investigation

Step 3: Validate capability gaps

The third step of the National Capability Gap Identification and Prioritization Method is to validate the first responder capability gaps identified in Step 2.

Format

It is important that the gaps are presented in a common format and worded in a clear manner during the validation process so that all readers have the same understanding of what is being described. The identified capability gaps should be presented in accordance to the format of IFAFRI common global capability gaps (i.e., “The ability to...”), as presented on the following page:

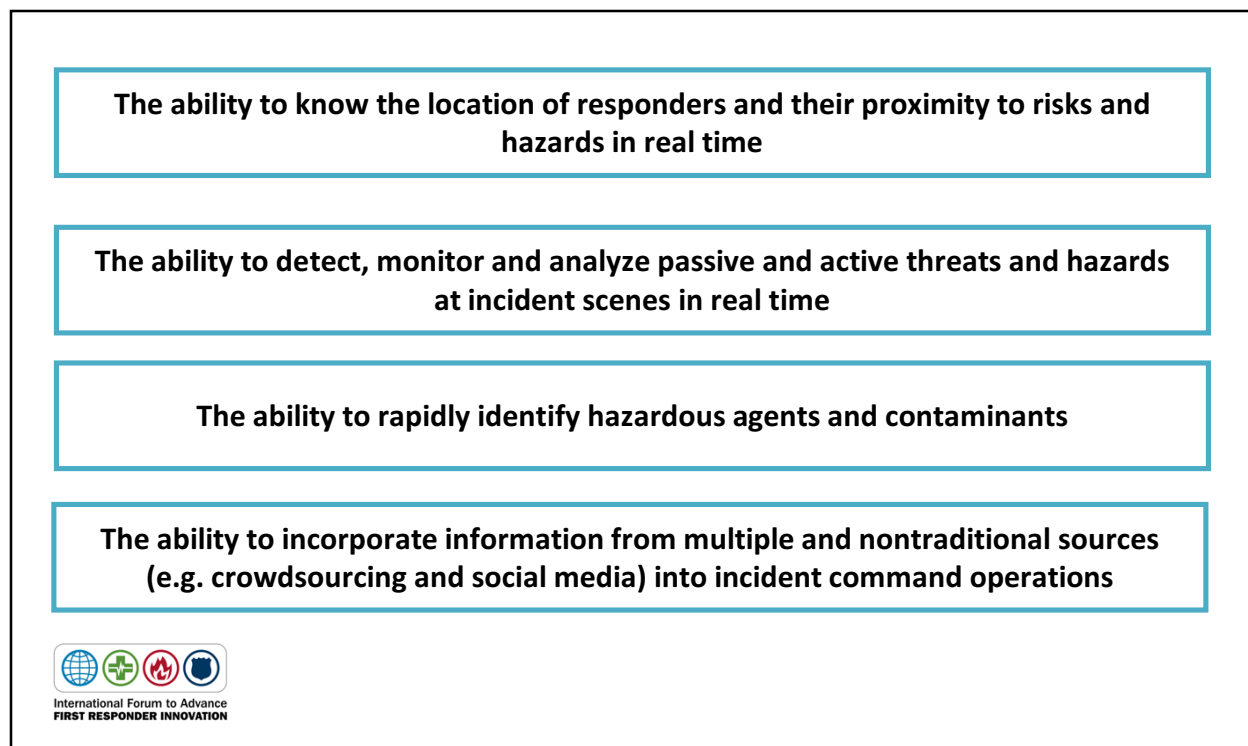


Figure 2: IFAFRI Common Global Capability Gaps List

Validation of capability gaps may be accomplished through in-person or virtual focus group meetings, surveys, etc. The intent is to ensure that capability gaps have been captured and articulated correctly and that those identified represent national-level gaps. Questions that may be asked to validate the capability gaps include:

- In your experience, does this capability gap represent a valid operational need?
- Is this gap worded clearly? Do you understand the gap as written?
- Is anything missing from this list of gaps?

Participants in the validation process should come from different response disciplines and areas of the country. A large sample size of responders that participate in the process improves the validity of the results.

Step 4: Prioritize capability gaps

The fourth step of the National Capability Gap Identification and Prioritization Method is to prioritize the capability gaps validated in Step 3. During the prioritization process, responders are asked to review the full list of capability gaps and assign a level of priority for each. There are multiple prioritization methodologies and tools available to conduct this process. The Capability Gaps Committee can provide advice and support to member nations regarding appropriate methodologies and tools upon request. For prioritizing the capability gaps, the following is a recommended list of variables that member nations may want to consider. An example of an evaluation for a capability gap, using these variables, is provided in Appendix D of this document.

(1) Increase first responder safety

Any capability gap that could improve the safety of first responders is critically important because their safety is necessary to effectively function in their tasks.

(2) Increase the safety of the affected population

One of first responders' most important tasks is to save lives; any capability gap that facilitates increasing civilian safety is a critical consideration.

(3) Mitigate incident consequences

After protection of human life, protection of property is of paramount importance to first responders. In some member nations, this legally extends to protection of the environment. This variable applies to any capability gap that concerns limiting or reducing the effects of an incident on property, assets, and the environment.

(4) Inform decision-making for incident management

With multiple streams of information flowing into the incident command, the ability to make actionable decisions based upon accurate information is tested. This variable relates to any capability gap that could improve the ability to manage or manipulate information to provide clear paths for making actionable decisions and tradeoffs.

(5) Improve the response for various types of incidents

First responders operate in various types of incidents (e.g. active shooter, public order, structure fire, natural disaster). This variable addresses the issue that equipment and tools are optimized when they can be used across multiple types of incidents, instead of specialized for one type of response.

(6) Impact the overall effectiveness or efficiency of the response

Overall effectiveness and efficiency is always a concern for any incident response.

Responders are asked to use a High/Medium/Low scale when assigning a level of priority for each capability gap. In addition to the prioritization variables listed above, it may be useful to indicate the urgency and relativity factors of a capability gap.

Urgency Factor: The urgency to address a capability gap is often determined by political or decision-maker needs. Therefore, a sense of urgency may influence the prioritization of a capability gap within a member nation. It may be useful to indicate this factor.

Relativity Factor: For the purposes of the National Capability Gap Identification and Prioritization Method, relativity is defined as the universal application of a proposed solution to a capability gap across the first responder disciplines and other emergency management stakeholders. The relativity of a proposed solution, despite its level of technological advancement, may influence the prioritization of a capability gap within a member nation. It may be useful to indicate this factor.

At the conclusion of Step 4, IFAFRI member nations will produce a document containing a written description of their methodology and scenarios and the prioritized list of national capability gaps. The document will be submitted to the PMO.

A proposed timeline for the National Capability Gap Identification and Prioritization Method and related items is provided in Appendix A of this document.

Appendix A

The following section presents the proposed timeline regarding the National Capability Gap Identification and Prioritization Method and related items.

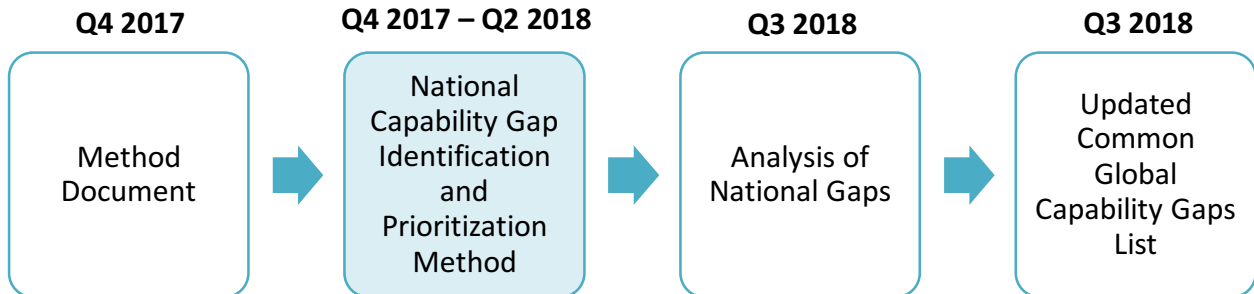


Figure 3: Timeline of Capability Gap Identification and Prioritization Method and Related Items

A notional timeline for the **National Capability Gap Identification and Prioritization Method** is presented below:

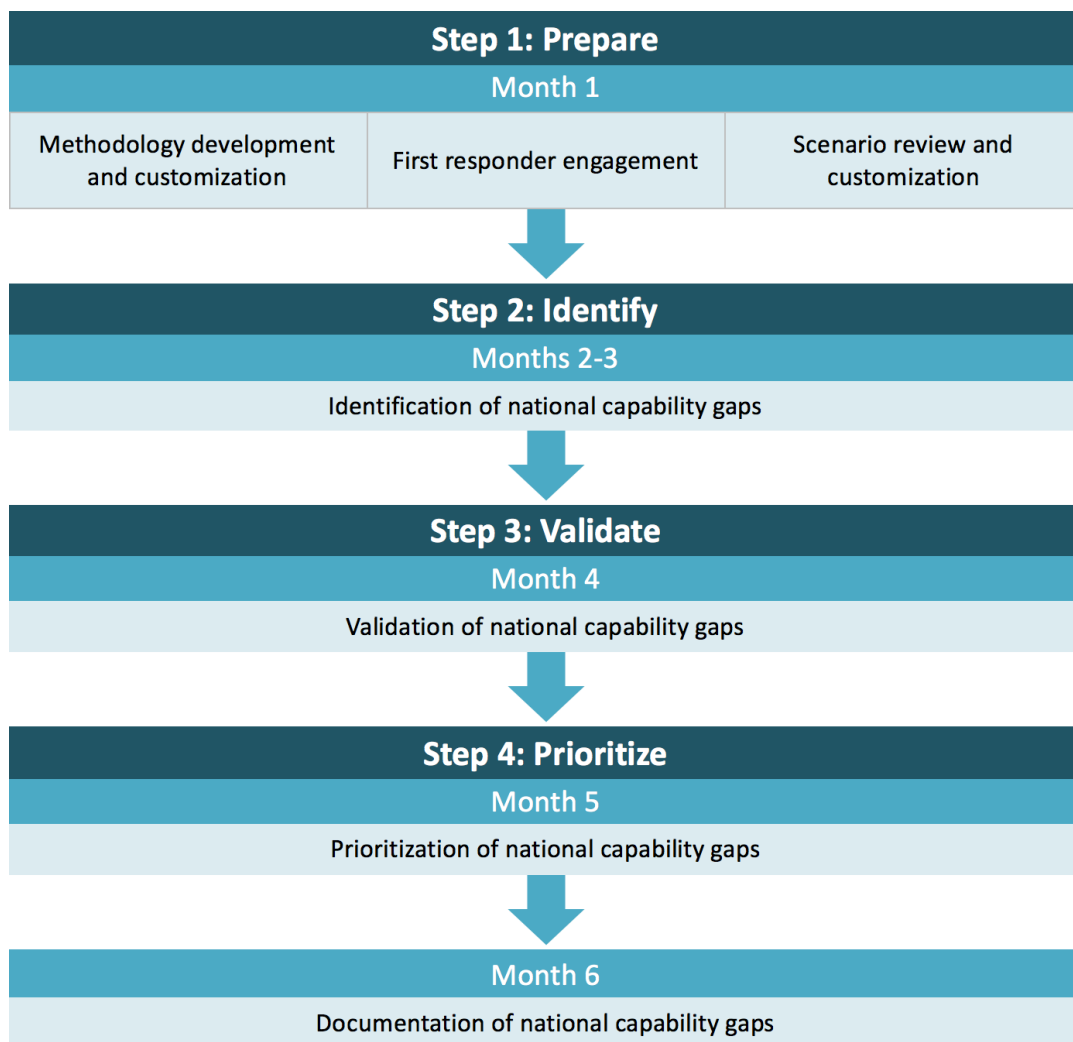


Figure 4: Notional Monthly Timeline of National Capability Gap Identification and Prioritization Method

Appendix B

The following section presents example first responder operating scenarios, which can be used to facilitate discussion among stakeholders and identify capability gaps. Each scenario contains a synopsis to give an overview of the incident and a timeline of response operations. These scenarios are based on actual incidents that have occurred in the IFAFRI’s member nations or adapted from national planning scenarios. Each scenario may be customized or altered to meet the standard procedures of individual member nations.

Example First Responder Operating Scenario: Active Shooter	
Incident Type:	Active Shooter
Incident Duration:	Initial suspect neutralized within 5 minutes; ensuing search for other suspects lasted
Incident Location:	High profile government site and military memorial located in the city center of a large urban jurisdiction
Time:	0953
Disciplines Involved:	Emergency Medical Services, Law Enforcement
Synopsis:	<p>At 0950 on a weekday morning, a gunman fired three shots into one of two soldiers standing guard at a military memorial. Although the soldier was fatally injured, numerous bystanders rushed to render aid. The gunman travelled a short distance by car to the entrance to a high-profile government building containing a large number of officials and lawmakers. The gunman entered the building and exchanged gunfire with building security officers. He then moved into the building and tried to conceal himself. Law enforcement and security officers trailed the gunman and then fatally wounded him during a fire fight. The suspect was neutralized within approximately 5 minutes. Law enforcement officers sheltered occupants of government and surrounding buildings in place during an extended search for additional suspects or other threats.</p>
Incident Timeline:	
0950	Gunman shoots soldier standing guard at military memorial
0952	911 center receives calls reporting gunfire at military memorial with description of the gunman
0952	Law enforcement officers are dispatched to incident scene
0951	Paramedic service dispatched to incident scene
0953	Gunman uses personal vehicle and then a hijacked vehicle to drive a short distance (400m) to the government building
0953	Law enforcement officer observes suspect vehicle and initiates pursuit
0953	Gunman abandons car and enters building. He is confronted by security officers. A struggle ensues and gunman fires at security officers
0953	Gunman continues to fire at security officers as he runs through the building
0955	The gunman is fatally wounded during a fire fight with law enforcement and security officers
1002	National Capitol Region Coordination Center (NCRCC) activated
1022	Situation Report: Incident command receives reports of 2 additional suspects and an armed suspect on the roof of adjoining government building
1802	Situation Report: Information received from witnesses indicates the involvement of 2 additional individuals

Example First Responder Operating Scenario: Public Order (Planned)

Incident Type:	Public Order (Planned)
Incident Duration:	March duration: 3 hours with additional pre-planning activities for 3+ weeks
Incident Location:	March
Time:	1230
Disciplines Involved:	Law Enforcement
Synopsis:	

A political activist group planned protest marches in several cities throughout the country. Details of the march were shared on social media, significantly increasing the planned attendance. Counter-protests were also planned by opposition groups. In anticipation of potential violence, law enforcement imposed strict conditions on the marchers, including separation of marches, specific route requirements, and designated march times. The march proceeded with relative peace, although counter-protestors skirmished with marchers and police.

Incident Timeline:	
1 June	Representatives from a political group alert law enforcement that they wish to demonstrate; 300 people anticipated in attendance
15 June	Anticipated attendance increased to over 1000 after march details shared on social media
24 June	Date of planned marches
1200	Demonstrators arrive at starting point to rally and wait for march to begin; approximately 50 group members march
1230	Counter-demonstrators arrive at area designated by law enforcement
1300	March begins; events are recorded by participants and media
1355	Chanting among the two groups escalates and missiles (e.g., placards, bottles, accessible items in the street) are thrown; peaceful demonstrators are trapped between groups engaged in violence
1405	Violence between the groups evolves into small, physical fights and destruction of public property
0953	Protestors scuffle with police

Example First Responder Operating Scenario: Public Order (Spontaneous)

Incident Type:	Public Order (Spontaneous)
Incident Duration:	Approximately 4 hours
Incident Location:	Cultural center of a large metropolitan city
Time:	1900
Disciplines Involved:	Law Enforcement
Synopsis:	

A group in a large metropolitan city were participating in a prayer vigil to protest the verdict of a high-profile criminal trial. Approximately 150 people broke off from the group and began committing acts of violence within the area, including smashing store windows, setting fires, vandalizing cars, and attacking bystanders. More than 350 law enforcement officers were dispatched to the area. Law enforcement declared the gathering to be “unlawful assembly” and cleared the streets within one hour. Police arrested 14 people for failing to disperse, vandalism, and assault.

Incident Timeline:	
1901	The “not guilty” verdict in a high-profile criminal trial is announced
1930	Residents begin to gather in a local park to conduct a prayer vigil in protest of the acquittal
1945	Additional residents and the media arrive at the park
2015	<ul style="list-style-type: none"> • The size of the crowd continues to grow • Approximately 650 protesters are participating • The chanting of the crowd intensifies
2030	<ul style="list-style-type: none"> • A group of 150 protesters breaks away from the park, moving up a main thoroughfare through the community • Protesters begin to climb on parked vehicles and break windows
2035	Law enforcement officers are dispatched to the scene
2045	Protesters set a vehicle on fire
2100	Approximately 15 of the 150 protesters enter a Wal-Mart shopping center, attacking security guards, destroying merchandise, and threatening shoppers
2115	Vandalism continues in the shopping center and surrounding areas

Example First Responder Operating Scenario: Structure Fire

Incident Type:	Structure Fire
Incident Duration:	Approximately 10 hours
Incident Location:	Chemical plant and surrounding area in small municipality
Time:	1420
Disciplines Involved:	Fire Services
Synopsis:	

A fire broke out when employees at a chemical processing and storage facility used a gas burner to thaw a pump mechanism. The fire quickly spread to an area of intermediate bulk storage containers, which melted and the chemical contents caught fire. The fire spread further to engulf the on-site storage buildings. Flammable, combustible, and explosive chemicals were stored at the facility. On-site safety staff attempted to extinguish the fire but were unsuccessful. A large cloud of smoke developed and moved over commercial and residential areas. Some residents were warned to take preventative measures to avoid exposure. Seven and a half hours after ignition, fire fighters began to apply foam extinguishers to the fire and it was under control within the hour. The local health service received 545 health related complaints. The fire caused significant material damage and environmental pollution.

Incident Timeline:	
1400	Employees use a gas burner to fix a frozen pump exhaust silencer; not permitted by environmental permits
1415	Employees use same gas burner to fix further issues with pump itself
1420	Collection tray under the pump, filled with flammable xylene, catches fire
1420	Employees attempt to extinguish fire with portable powder extinguisher, but fail to switch off the pump power system; also fail to activate the alarm
1426	Facility receptionist calls 112 to notify fire brigade
1430	Company employee sprayed forceful stream of water into the fire, causing burning resin and xylene to spread
1435	The closest intermediate bulk storage containers begin to melt, allowing flammable contents to flow directly into the fire; creates "pool fire"
1435	Initial fire truck arrives

Example First Responder Operating Scenario: Natural Disaster (Earthquake)

Incident Type:	Natural Disaster (Earthquake)
Incident Duration:	Response activities: Weeks to months Recovery activities: 1 year+
Incident Location:	Multi-state area
Time:	1015
Disciplines Involved:	Emergency Medical Services, Fire Services, Law Enforcement
Synopsis:	

An earthquake measuring 6.5 on the Richter scale hit a known seismic zone at 10:15am. Ground shaking from the main shock lasted for more than 45 seconds in some areas. As a result of the earthquake, more than 2500 people require hospitalization for their injuries and thousands more require minor medical attention. Hundreds are presumed dead.

- Thousands of homes destroyed requiring short and long-term shelter for population
- Extensive damage to bridges and roadways, complicating efforts to respond and supply
- Damage to industrial facilities and shipping vessels results in hazardous material (HAZMAT) conditions in multiple cities
- Damage to water distribution and wastewater treatment facilities impacts health and sanitary conditions
- Large structural fires break out because of damage to gas pipelines
- Extensive power outages occur because of damage to power grids
- Communication failures are widespread due to damage to cell towers and phone lines

Aftershocks of varying intensity are felt throughout the region in the days after the earthquake, causing further damage to structures already weakened by previous shaking.

Incident Timeline:	
1015	M6.5 earthquake occurs, with epicenter in a mid-sized community located in a mountainous zone
1016	Shaking from the initial quake stops
1016	Local residents attempt to call 911, but are unable to get through using cell phones or land lines
1020	Residents begin to perform rescue operations for those trapped within the rubble
1022	Firefighters attempt to respond within the community but apparatus is blocked by damage to roadways
1022	On- and off-duty law enforcement officers respond throughout the community
1022	EMS assets respond to the disaster area closest to their vehicle and begin providing triage and medical treatment
1031	EMS attempts to transport patients; many find transport routes blocked; divert to any medical facility in the area
1053	State-based search and rescue assets begin mobilization
1144	Local hospitals are overwhelmed with injured walk-ins
1215	Red Cross opens shelters throughout the community for displaced residents
--	Response operations (e.g., fire suppression, medical treatment, search and rescue, perimeter maintenance) continue

Appendix C

The following section presents a list of example questions that may be used to help identify existing capability gaps whether using the scenarios presented in Appendix B or others developed by member nations.

1. Describe your operational needs for this scenario. Are you able to fulfill your operational mission for this scenario, including all tasks and procedures? What new capabilities might improve your ability to respond efficiently and effectively to this scenario?
2. Describe your situational awareness needs for this scenario. What are the capability gaps related to situational awareness for this scenario? What new capabilities might improve situational awareness for this scenario?
3. Describe your communications needs for this scenario. What are the capability gaps related to communications for this scenario? What new capabilities might improve communications for this scenario?
4. Describe your command, control, and coordination (C3) needs for this scenario. What are the capability gaps related to C3 for this scenario? What new capabilities might improve C3 for this scenario?
5. Describe your responder health and safety needs for this scenario. What are the capability gaps related to responder health and safety for this scenario? What new capabilities might improve responder health and safety for this scenario?
6. Describe your logistics and resource management needs for this scenario. What are the capability gaps related to logistics and resource management for this scenario? What new capabilities might improve logistics and resource management for this scenario?
7. Describe your casualty management needs for this scenario. What are the capability gaps related to casualty management for this scenario? What new capabilities might improve casualty management for this scenario?
8. Describe your intelligence and investigation needs for this scenario. What are the capability gaps related to intelligence and investigation for this scenario? What new capabilities might improve intelligence and investigation for this scenario?
9. Describe the risk assessment and planning activities that should have been done before this scenario. What are the capability gaps related to risk assessment and planning for this scenario? What new capabilities might improve risk assessment and planning?
10. Describe the training and exercises that should have been completed to prepare for this scenario? What are the capability gaps related to training and exercise for this scenario? What new capabilities might improve training and exercise?
11. Are there other capability gaps that are not covered by the preceding questions?

Appendix D

The following section presents an example evaluation for a capability gap defined as *the ability to know the location of responders indoors (above and below ground)*.

The ability to know the location of responders indoors (above and below ground):

Anticipated Benefits		
Increase first responder safety	✓	<i>Knowing the location of responders indoors may help to identify their proximity to risks and hazards.</i>
Increase the safety of the affected population		<i>This capability gap is responder-specific; at this point it does not involve the safety of the affected population.</i>
Mitigate incident consequences		<i>This capability focuses on first-responder safety, rather than mitigating incident consequences.</i>
Inform decision-making for incident management	✓	<i>Knowing the location of responders indoors may help to identify their proximity to risks and hazards and will likely lead to more informed decision-making by incident management.</i>
Improve the response for various types of incidents	✓	<i>Various incidents (e.g. active shooter, structure fire) may occur indoors, either above or below ground. First responder location knowledge will likely improve the response during all of these incidents.</i>
Impact the overall effectiveness or efficiency of the response	✓	<i>First responders often respond to indoor incidents both above and below ground. The ability to know the location of responders helps to inform decision-making for incident management, increase first responder safety and provide a more comprehensive operating picture.</i>

Priority: HIGH

Improvements to this capability gap are likely to increase first responder safety. Therefore, the capability gap is of high priority.

Urgency Factor: HIGH

In the U.S., this capability gap is of high priority, especially among the fire services community. Efforts to address this capability gap are currently in development.

Relativity Factor: MEDIUM

A proposed solution to this capability gap has the potential to be deployed among all first responder disciplines. However, it appears to be most applicable to fire services and law enforcement personnel.