



Homeland  
Security

Science and Technology

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# Project Responder 4

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# Why It's Needed

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- Catastrophic incidents significantly exceed the capabilities of local, regional, and/or state jurisdictions**
  - **Require coordination and sharing of resources and information**
  - **Entail long-term response and recovery operations**
  
- There are gaps between what response agencies can currently do and what they feel is necessary for large-scale incident response**
  
- It is beyond the ability of state and local agencies to address all capability needs for catastrophic incident response**
  
- State and local agencies cannot:**
  - **Fund the development of new equipment**
  - **Set universal standards**
  - **Facilitate the integration of resources**
  - **Coordinate national information-sharing protocols**

# Project Responder 2001-2011

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- ❑ Project Responder (PR) initially funded in April 2001 by the Department of Justice, prior to the establishment of DHS**
- ❑ Focused on identifying capability needs, shortfalls, and priorities related to catastrophic incident response**
- ❑ Involved over 250 emergency responders from a broad spectrum of response agencies and jurisdictions**
- ❑ Three iterations of Project Responder over 10 years resulted in 3 primary reports:**
  - 2001 – Project Responder National Technology Plan for Emergency Response to Catastrophic Terrorism (PR1)**
  - 2004 – Project Responder: Review of Emergency Response Capability Needs (PR2)**
  - 2011 – Project Responder 3: Toward the First Responder of the Future (PR3)**

# The Project Responder 4

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❑ Purpose: Examine the state of science and technology for opportunities to address the most persistent and highest priority capability needs and develop a plan to meet those needs

❑ Objectives:

- Identify the enduring and emerging capability areas that should be addressed in PR4
- Assess the state of science and technology to meet those needs
- Identify potential technology solutions
- Develop roadmaps that illustrate a coherent technology path to addressing the high-priority needs

# PR4 Terminology

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## □ PR4 capability needs are organized using the following structure:

- Capability domains represent broad operational categories of emergency response and denote areas where similar needs are consistently identified. Each capability need fits into a capability domain.
- Capability statements describe an essential ability required to perform a critical function(s). There are 14 PR4 capability needs.
- Response Technology Objectives (RTOs) translate capability needs into actionable, technology-centric objectives. There are multiple RTOs for each capability need.

# Methodology

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## ☐ **Phase 1: Identify and validate capability needs**

- Review previous reports and identify functional areas
- Identify specific capability needs for assessment
- Validate and prioritize needs

## ☐ **Phase 2: Identify technology objectives**

- Conduct focus group to identify RTOs

## ☐ **Phase 3: Identify proposed science & technology solutions**

- Conduct baseline research on technology objectives
- Facilitate workshop with responders to identify baseline capability and goals
- Conduct additional research with technologists to assess the state of science & technology and potential solutions for each RTO

## ☐ **Phase 4: Develop technology roadmaps**

- Develop high-level roadmaps for each RTO

# PR4 To Date

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## Phase 1: Identify and validate capability needs

- 7 capability domains identified and defined
- 3 virtual meetings held with 77 IAB and FRRG participants
- 14 enduring and emerging capability needs identified and defined
- Virtual prioritization process completed by 129 responders

## Phase 2: Identify technology objectives

- Focus group held in Nov 2014, 58 RTOs identified

## Phase 3: Identify proposed science & technology solutions

- PR4 workshop held 4-6 March 2014, involving 26 responders from traditional and non-traditional response agencies
- Interviews (in-person and telephonic) with subject matter experts ongoing

# Identification of PR4 Capability Needs

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**Three kinds of activities lead to PR4 capability needs:**

- Enduring needs identified during the previous PR efforts**
- PR3 Priorities**
- Emerging capability needs**

***NOTE: This slide was converted from the original graphic to text only in order to meet 508 compliance. For the original graphic, contact Mary Hanson, [mary.hanson@hq.dhs.gov](mailto:mary.hanson@hq.dhs.gov)***

# Enduring Capability Priorities

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- ❑ **2004 Priorities:** Body protection from all hazards, on scene detection, remote and standoff detection, point location and ID, seamless connectivity and integration, mass victim decontamination, risk awareness and assessment, mass medical prophylaxis, mass casualty and medical care, individual and collective protection, surveillance and integration, logistics information system, threat assessment/data collection /analysis
  
- ❑ **2008 Priorities:** Command and management, communications, seamless data integration, full body personal protection, logistics support, mass prophylaxis distribution, training and exercise programs, mass victim decontamination, responder respiratory protection, point location and ID, prioritization and dissemination of threat info, credentialing
  
- ❑ **2011 Priorities:** Virtual simulation training, responder location, all environment communications, remote tactical monitoring, body protection from all hazards, PPE integrated communications, threat detection and monitoring, resource availability, trend and pattern ID, hazard ID, on-scene resource status, casualty location
  
- ❑ **2014 Priorities:** All environment communications, responder location, threat detection and monitoring, hazard ID, remote tactical monitoring, body protection from all hazards, PPE integrated communications, resource availability, casualty location, trend and pattern ID, , on-scene resource status, virtual simulation training, all resource information integration, software application assessment

# PR4 Capability Priorities

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## ❑ Capability Domain: Situational Awareness

- The ability to know the location of responders and their proximity to risks and hazards in real time
- The ability to detect, monitor, and analyze passive and active threats and hazards at incident scenes in real time
- The ability to rapidly identify hazardous agents and contaminants
- The ability to incorporate information from multiple and nontraditional sources (e.g., crowdsourcing and social media) into incident command and operations

## ❑ Capability Domain: Communications

- The ability to communicate with responders in any environmental conditions (including through barriers, inside buildings, and underground)
- Communications systems that are hands free, ergonomically optimized, and can be integrated into personal protective equipment

# PR4 Capability Priorities

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## ❑ **Capability Domain: Command, Control, & Coordination (C3)**

- The ability to remotely monitor the tactical actions and progress of all responders involved in the incident in real time
- The ability to identify trends, patterns, and important content from large volumes of information from multiple sources (including nontraditional sources) to support incident decision making
- The ability to identify, assess, and validate emergency-response-related software applications

## ❑ **Capability Domain: Responder Health, Safety, & Performance**

- Protective clothing and equipment for all responders that protects against multiple hazards

# PR4 Capability Priorities (continued)

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## ❑ **Capability Domain: Logistics & Resource Management**

- The ability to identify in real time what resources are available to support a response (including resources not traditionally involved in response), what their capabilities are, and where they are
- The ability to monitor in real time the status of resources and their functionality in current conditions

## ❑ **Capability Domain: Casualty Management**

- The ability to remotely scan an incident scene for signs of life and decomposition to identify and locate casualties and fatalities

## ❑ **Capability Domain: Training & Exercise**

- Readily accessible, high-fidelity simulation tools to support training and exercises in incident management and response

# PR4 Response Technology Objectives

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- ❑ Used guided discussions to capture capability gaps and translate operator needs into actionable, technology-centric objectives
- ❑ Four-step process:
  - Responders and technologists reviewed each capability statement
  - Responders described their current capability level
  - Responders described the capability goals and associated operating parameters
  - Technologists translated responder capability needs into RTOs
- ❑ 58 RTOs identified
- ❑ Responders described current capability and goals for each RTO during workshop
- ❑ Research ongoing with technical subject matter experts to identify the current state of science and technology and resource requirements/technological challenges associated with potential solutions for each RTO

# PR4 Product or Output

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- ❑ Expected delivery end of July 2014
- ❑ Will contain a series of high-level technology roadmaps including new or transitioned technologies and knowledge products
- ❑ Based on the input of the subject matter experts during the interviews and data gathering process
- ❑ RTOs to be described in terms of:
  - Current capability
  - Objectives
  - State of the art
  - Resource requirements (high-level estimates based on subject matter expert projections)
  - Technology challenges
  - Non-technology barriers

# Notional PR4 Technology Roadmap

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- ❑ **The original slide for this location was a graphic that does not meet 508 compliance. It shows how research technology objectives (RTOs) extend across all capabilities and domains. It depicts general timeframes for four categories of RTOs (RTO1 through RTO4) from 2015 through 2019. For the original graphic, contact Mary Hanson, [mary.hanson@hq.dhs.gov](mailto:mary.hanson@hq.dhs.gov)**