



# 2016 IAB RESEARCH & DEVELOPMENT PRIORITY LIST

This R&D survey was vetted through the IAB membership. The research and development items were assessed based on the following criteria: mission performance, life safety of first responders and civilians, strengthening response

systems, and anticipation of purchase by communities in need. To learn more about the IAB and survey, please visit [www.interagencyboard.org](http://www.interagencyboard.org).

1.	<b>INDOOR 3-D TRACKING OF PERSONNEL</b>	Technologies for tracking operating personnel in a 3-D environment indoors, defined as urban type infrastructure such as a high-rise building to include XYZ coordinates. This item consists of two components: transmitting device carried by a first responder that allows an electronic signal to be located on both a horizontal and vertical access as well as a computer that receives the signal and displays it in real-time.
2.	<b>LAW ENFORCEMENT USE OF UNMANNED AIRCRAFT SYSTEMS (UAS)</b>	Research and development of UAS-related tools and standards for use to help law enforcement agencies start and maintain an effective UAS program in compliance with relevant Federal and state laws.
3.	<b>HANDHELD STANDOFF CHEMICAL &amp; EXPLOSIVE IDENTIFIER</b>	Instrument capable of detecting and identifying chemical substances and explosives from outside the exposure or contamination zone, at standoff distances to determine whether it is safe to go any further without donning PPE.
4.	<b>3-D X-RAY</b>	Ability to take multiple x-rays of a package from different angles within a single plane and develop into a 3-D image viewable by computer screen, preferably with only one trip downrange.
5.	<b>OUTDOOR 3-D TRACKING OF PERSONNEL</b>	Technologies for tracking operating personnel in a 3-D environment outdoors, defined as wildland or hazmat environments (out of line-of-sight) to include XYZ coordinates. This item consists of two components: transmitting device carried by a first responder that allows an electronic signal to be located on both a horizontal and vertical access as well as a computer that receives the signal and displays it in real-time.
6.	<b>HME NEUTRALIZATION</b>	Method to neutralize HME, changing it from an explosive hazard to an inert material that is safe to transport and dispose of.
7.*	<b>DEVELOPMENT OF PERFORMANCE REQUIREMENTS &amp; TEST METHODS FOR BALLISTIC-RESISTANT BODY WORN ARMOR FOR WOMEN</b>	Research to support the development of performance requirements and test methods for shaped (non-planar) body armor worn by women to ensure equipment meets their protection and coverage requirements.
7.*	<b>NOISE FILTERING DIGITAL SPEAKER/MICROCLIMATE FOR SCBA FACEPIECE</b>	Sound cancelling/neutralization to decrease communication issues that arise from the use of the SCBA. For example, elimination of air passing in and out allowing user to hear what is being said on the radio as well as being clearly understood when speaking.

\* Tied ranking



## CONTACT INFORMATION

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9.	<b>PORTABLE, RUGGEDIZED, RAPID BIODETECTION AND IDENTIFICATION KIT</b>	Rapid advanced field-grade PCR or other technology that can deliver reliable and sensitive identification, detection of biological pathogens (bio-threat, food/water, and environmental) that is FDA-approved.
10.	<b>IMPROVED MICROCLIMATE COOLING SYSTEM FOR DOWN RANGE USE</b>	Device effective in maintaining body core temperatures at acceptable levels and that can be worn during extended down range operations in PPE, particularly chemical protective ensembles.
11.	<b>MISSION CRITICAL VOICE OVER LTE</b>	End-to-end encryption to allow the use of collaborative devices (LTE—long-term evolution and LMR—land mobile radio) during a large incident involving multiple agencies addressing security, routing, and priority of voice packets over non-LMR networks.
12.	<b>META-ANALYSIS OF PREVENTABLE CAUSES OF DEATH OF LAW ENFORCEMENT</b>	A comprehensive analysis of the preventable causes of death including death by weapons and vehicles as well as wellness issues such as cardiac and cancer.
13.	<b>WEARABLE INTRINSICALLY SAFE MINIATURIZED MULTI-DETECTOR SENSORS</b>	Technology platform that transmits multiple, wearable sensors integrated into a single platform with wireless communication capability for a comprehensive understanding of the hazards responders are encountering and mitigating the incident they are responding to. Both the wearer and Incident Command post would be able to monitor the sensors with visual and audio alarms.
14.	<b>ROBOTIC X-RAY INTEGRATION</b>	Capability for existing bomb squad robots that could incorporate key components of the x-ray system into the robot frame and communications system, so source and imager components are added, attached to robot, and managed by robot operator.
15.	<b>INEXPENSIVE, PORTABLE RUGGEDIZED POINT-OF-CARE LAB TESTING DEVICE</b>	Hand-held device for point-of-care testing of bloodwork. It must be inexpensive, rugged, rapid (results < 10 minutes), and rechargeable (battery life of at least 8 hours) and have high sensitivity/specificity of lab based blood tests.
16.	<b>COST EFFECTIVE MEANS OF STORING VIDEO AND REDACTING IMAGERY</b>	Ability to manage, redact, edit, store and release video to the public. Technology tool to assess imagery for information and images that contain personally identifiable information that cannot be shared publicly and redact the information for public release.

17.	<b>THERMAL IMAGING CAMERA TRAINING AND USE CATALOG</b>	Research into how thermal imagers are being utilized in the fire service, additional applications thermal imagers have in improving responder safety and efficiency and develop training to incorporate uses into firefighter training programs.
18.	<b>MULTI-METER FOR BOMB TECHNICIANS</b>	Tool with integrated indirect current probes and voltage meter, ammeter and continuity tester. Color-coded probes should be optimized for taking voltage and current measurements through the insulation of detonator leg wires. Tool should provide actions based on meter readings and have programmable thresholds.
19.	<b>POST INCIDENT DECONTAMINATION-USE OF WIPES FOR THE NECK</b>	Research to definitively conclude whether “baby wipes” are an effective means of post-decontamination for first responders.
20.*	<b>STRUCTURAL FIRE/IDLH ESCAPE RESPIRATOR</b>	Technology to provide escape from a structure fire in the event of depletion or failure of the primary air source (SCBA), could be a filter that attaches to the SCBA facepiece and protects against toxins found in fires or an oxygen generating component to the system.
20.*	<b>RESPONDER/RECEIVER MENTAL HEALTH AND WELLNESS</b>	Suite of mobile applications providing pre-event stress inoculation, post-event psychological field aid, and post-event self-assessment and referral for occupational stress exposure and the continuum of stress responses.
22.	<b>NON-BURNING TREATMENT SYSTEM FOR ILLEGAL FIREWORKS</b>	Feasibility study into an EPA-approved mobile treatment unit process for treatment, recycle/reuse, and destruction of fireworks, other explosives, and pyrotechnics to determine whether process is feasible and safe and protective of human health and environment. Next phase would include a proof of concept for mobile treatment unit.
23.	<b>RAPID, UNIVERSAL, BATTERY CHARGER FOR PORTABLE IN-HOME MEDICAL DEVICES</b>	A battery charger for portable in-home medical devices that rapidly charges the back-up batteries when electricity is unavailable in the home.
24.	<b>COLLISION AVOIDANCE SYSTEMS FOR RESPONSE VEHICLES</b>	System (smart phone application) that would notify civilian vehicles and pedestrians via smartphone or dashboard device, about approaching emergency vehicles. System would be an “opt in” program and would capitalize on existing mapping and communication systems.
25.	<b>VESSEL PENETRATION SAMPLING DEVICE</b>	Portable, handheld device to “drill” into containers (glass, metal, plastic, etc.) to obtain samples for field analysis.

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