



2017 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.

1.	USE OF UNMANNED AIRCRAFT SYSTEMS (UAS)	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.
2.	INDOOR 3-D TRACKING OF PERSONNEL	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.
3.	INTEROPERABILITY REQUIREMENTS FOR INCIDENT MANAGEMENT SYSTEMS	Research and development and standards coordination for an integrated incident management system that interfaces with and across platforms to 3 rd party technologies such as accountability (company, unit, location), air management, biometrics, and environmental data.
4.	ALTERNATIVE CROWD DISPERSAL DEVICE	Crowd dispersal device that gets immediate compliance from individuals to disperse the area. The device should be chemical/toxic free and should not come in contact with or have the potential for injury to individuals it's deployed upon.
5.	OUTDOOR 3-D TRACKING OF PERSONNEL	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.	HME NEUTRALIZATION	Method to neutralize HME, changing it from an explosive hazard to an inert material that is safe to transport and dispose of.
7.*	3-D X-RAY	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.
7.*	ROBOTIC X-RAY INTEGRATION	Capability for existing bomb squad robots that could incorporate key components of the x-ray system into the robot frame and communications system, so that when source and imager components are added, they attach to the robot in a way that the x-ray system can be managed by the operator.

* Tied ranking



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9.	HANDHELD STANDOFF CHEMICAL & EXPLOSIVE IDENTIFIER	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.
10.	NEXT GENERATION AMBULANCE/PATIENT	EMS vehicle with enhanced patient compartment that allows EMS workers to perform their critical tasks while maintaining a condition of being adequately restrained in the vehicle, while their tools and equipment are restrained as well.
11.	DEVELOPMENT OF PERFORMANCE REQUIREMENTS & TEST METHODS FOR BALLISTIC-RESISTANT BODY WORN ARMOR FOR WOMEN	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.
12.	NOISE FILTERING DIGITAL SPEAKER/MICROCLIMATE FOR SCBA FACEPIECE	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.
13.*	RESPONDER KNOWLEDGE DATABASE 2.0 (DIGITAL RKB)	Easily accessible digital/web-based database index of peer-evaluated purchasing guidelines for medical equipment and devices. The database will include product specs along with feedback on the equipment/device provided by other first responders
13.*	INEXPENSIVE, PORTABLE RUGGEDIZED POINT-OF-CARE LAB TESTING DEVICE	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.
15.	TRACKING OF EVACUATED POPULATIONS	Develop a capability to track survivors and casualties during a mass causality to include the ability to identify evacuees and have them provide anticipated location for reunification and repopulation purpose, provide updated location information remotely, vet inquiries from evacuees with respect to incident/property status and from family members of evacuees, and to contact evacuees to provide updated incident information.
16.	UNIVERSAL SUIT SEAL/ RESPIRATOR-TO-SUIT INTERFACE	Universal elastomeric suit seal that allows any NIOSH certified face piece to be worn with any NFPA 1992, NFPA 1994 or NFPA 1999 certified ensemble.

17.	sUAS WITH MULTIGAS METERING FOR OPERATION IN FLAMMABLE GAS ENVIRONMENTS	Small unmanned aerial system (sUAS) that weights under 10 lbs. and has a combination of sensors commonly found in gas meters routinely employed by first responders. The sUAS should be able to be used both indoors and outdoors and also be able to send readings wirelessly.
18.	VEHICLE TO VEHICLE ALERTING	Collision Avoidance system for both emergency vehicles and passenger vehicles that choose to participate in the system.
19.	NON-PYROTECHNIC DIVERSIONARY DEVICE	Alternative device that can be deployed when Noise Flash Diversionary Devices (NFDD) or "flash" bangs cannot be used. The device should have similar disabling characteristics with improved safety.
20.	EFFECTIVENESS OF WIPES AS SKIN DECONTAMINATION AID AT FIRE SCENE	Research to determine whether the use of different types of absorbent wipes are effective in removing fireground contamination from the skin of firefighters without exacerbating dermal exposure.
21.	MULTI-METER FOR BOMB TECHNICIANS	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.
22.	IMPROVED MICROCLIMATE COOLING SYSTEM FOR DOWN RANGE USE	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.
23.	RESPONDER/RECEIVER MENTAL HEALTH AND WELLNESS	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.
24.	TOURNIQUET TESTING FIXTURE	A device that measures the internal pressure in a limb created by an applied tourniquet. This device should test the efficacy of vascular occlusion pressures to ensure that a tourniquet design is effective for clinical use.
25.	ANALYSIS SOFTWARE/SIGNAL PROCESSING FOR SITUATIONAL AWARENESS	Software/device that enables a user to talk into and/or listen to a device that translates languages, identifies who is speaking, analyzes voices for stress/distress, and identifies background noises (i.e. gun shots). Translation/processing should occur in near real-time with greater than 95% accuracy.

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