Future R&D Capability Gaps

Pre-detonation
The ability to cause IEDs to trigger at the time and place of the warfighter's choosing

Counter-threat network
The ability to proactively find and fix IED builders, suppliers, financiers, and distributors

Detection
The ability to determine the location of emplaced IEDs and IED components

Counter-device
The ability to neutralize IEDs before detonation or mitigate the effects following detonation

Homemade explosives
The ability to locate, avoid, and neutralize IEDs containing non-standard explosives compounds

Information integration and fusion
The ability to integrate, visualize, and analyze information and intelligence to increase situational awareness for C-IED/counter-threat network planning and operations

Weapons Technical Intelligence
The ability to collect and exploit information from individuals, IEDs and components to understand threat networks, IEDs, and components

ATTACK THE NETWORK | DEFEAT THE DEVICE | TRAIN THE FORCE

JIEDDO
JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT ORGANIZATION

Future capabilities must be: Scalable – Affordable – Adaptable – Expeditionary – Domestic Application – Whole-of-government Approach

R&D GAPS	OPERATIONAL NEEDS	CRITICAL ENABLERS
Pre-detonation		
	Pre-detonate IEDs while dismounted	Light-weight, hand-employed, pre-detonation systems
	Pre-detonate IEDs while mounted	Mutually supporting pre-detonation devices not on the same vehicle; pre-detonation at convoy speeds
	Pre-detonate from airborne platform	Semi-autonomous airborne systems
	Pre-detonate surface, deeply buried, and underwater IEDs	Kinetic or non-kinetic pre-detonation systems
	Integrate pre-detonation with other systems	Modular family of pre-detonation systems able to be integrated with detection systems
	Reliable pre-detonation, with minimal collateral damage	Precision-targeted pre-detonation systems with ability to designate hazardous-duds for clearing
Counter-threat Network		
	Identify threat network activities	Automated pattern recognition technologies which identify hostile intent/ behavior
	Identify threat network financiers and finance activities	Improved processing and trend recognition of threat finance data
	Identify targetable threat C4ISR vulnerabilities	Data surveillance for analytical trending, automated, and integrated
	Rapidly analyze emerging operational environments	Better data correlation to improve processing time
	Rapidly deploy analysis/fusion teams and technology	Expeditionary analytic fusion systems and personnel with reachback capability
	Track IED components	Identify IED component supply chains in individual areas of operation/interest
	Gain understanding of social/cultural aspects of counter-insurgency	Identify best practices for training culture specific skills
Detection		
	Capture, catalog, and identify IED and component signatures	Detection of IED component observables to allow device detection and trace
	Detect IEDs from a safe stand-off distance	High reliability, low false alarm, detection of low-metallic devices at safe distances
	Detect IEDs while dismounted	Integrated detectors, reduced-size and weight of systems, handheld, wearable
	Detect IEDs while mounted	IED detection at convoy speeds; mutually supporting detection devices on multiple vehicles
	Detect IEDs from airborne platform	Integration with airborne intelligence, surveillance, reconnaissance (ISR) systems; semi-autonomous airborne systems
	Improve detector sensitivity and improve false alarm rate	Systems capable of detecting explosive compounds in trace amounts
	Detect water-borne IEDs (WBIED)	Standoff surface and underwater water-borne IED detection
Counter Device		
	Disable IED delivery systems in multiple environments	Lethal/non-lethal counter-WBIED/VBIED/SVBIED tech with hazardous-dud designation ability
	Mitigate effects of IED attacks on dismounts and mounted	Lighter, more effective personnel armor and vehicle protection
	Neutralize WBIEDs	Counter-swimmer, counter-swarm, hull-emplaced IEDs, in varying water operational environments
Homemade Explosives		
	Improve sensor capabilities to detect HME	Higher sensor sensitivity, distributed systems
	Disrupt supply chains	Tagging, tracking, and locating precursor materials
	Render HME precursors unsuitable/less detonable	Fertilizer modification during production; mixing with less-detonable materials
Info Integration & Fusion		
	Computer-based decision aids for command and control systems	Comprehensive and up-to-date database of counter-IED tactics, techniques, and procedures, and lessons learned
	Fusion of databases across the C-IED enterprise	Tagging, sorting, discovery, and visualization of knowledge in large data sets
	Provide multi-dimensional data visualization	Improved geospatially-rendered data visualization; multi-dimensional
	Provide robust data connectivity and high-speed computing	High-speed data correlation/computing and technologies to support bandwidth-constrained users
	Rapidly disseminate data to support decision making	Mobile/small form-factor devices for analytical product reception
	Seamlessly share Information among partners	Improved data processing/ingestion — semantic discovery, x-domain, x-network — data sense making
Weapons Technical Intelligence		
	Collect biometric data from a stand-off position	Technologies allowing collection of materials from non-cooperative subjects and fix/match identity
	Rapidly collect and analyze biometric data	Mobile biometrics data collection/analysis; real-time signature match
	Rapidly collect and analyze forensic data	Automated, user-friendly, durable, mobile forensics analysis suite
	Reliably fuse and transfer WTI data	Integration of all technologies that collect, submit, and analyze WTI data