



# **NDIA 6<sup>th</sup> Annual Disruptive Technologies Conference Protection Operational Capabilities**

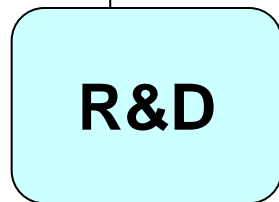
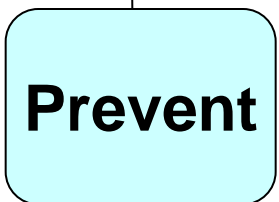
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# *Purpose and Agenda*

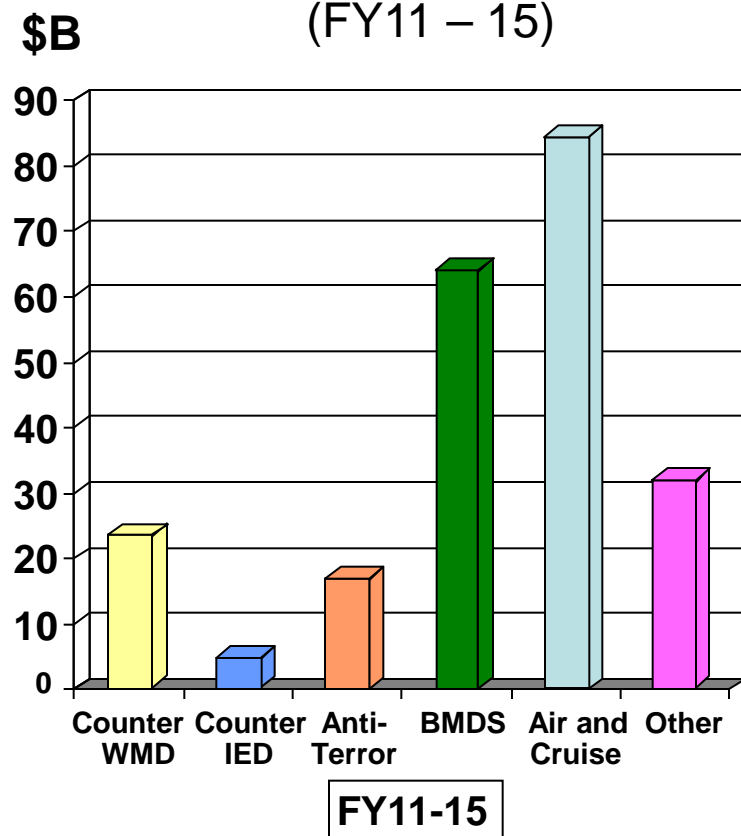
- ❑ **Purpose: To provide an overview of protection portfolio and associated desired operational capabilities**
- ❑ **Background of Protection Portfolio**
- ❑ **Protection Joint Capability Areas**
- ❑ **Major Portfolio Inputs**
- ❑ **Portfolio Portfolios and JCAs Linkages**
- ❑ **Capability Goal and Gap Influences**
- ❑ **Goals and Attributes**
- ❑ **Desired Operational Capabilities**

# Protection DoD Portfolio Background



Cross Cutting Protection Capability  
Mission Areas

988 programs  
investment about \$267B  
(FY11 – 15)





# Protection Joint Capability Area

Protection is defined as “the ability to prevent/mitigate the adverse effects of attacks on personnel and physical assets of the U.S., its allies, and its friends”

- ❑ **Prevent – The ability to neutralize an imminent attack or defeat attacks on personnel (combatant/non-combatant) and physical assets.**
  - **Prevent Kinetic Attack** – The ability to defeat attacks being delivered by systems which rely upon physical momentum.
  - **Prevent Non-kinetic Attack** – The ability to defeat attacks being delivered by systems which do not rely upon physical momentum.
- ❑ **Mitigate – The ability to minimize the effects and manage the consequence of attacks (and designated emergencies on personnel and physical assets).**
  - **Mitigate Lethal Effects** – The ability to minimize the effects of attacks or designated emergencies which have the potential to kill personnel and destroy physical assets.
  - **Mitigate Non-lethal Effects** – The ability to minimize the effects of attacks or designated emergencies which do not have the potential to kill personnel and destroy physical assets.
- ❑ **Research and Development – The ability to conduct fundamental research, science, technology, development and experimentation important to all Departmental capabilities and operations (Basic, Applied, Advanced Technology Development)**



# Protection Portfolios



- **Air and Missile Defense** (including the protection of U.S. space systems & capabilities)



- **Combating WMD** (including U.S. nuclear weapons security, consequence management of WMD attacks and natural disasters, and defense crisis management)



- **Protection** (including defense against IEDs and other kinetic attack means, and defense critical infrastructure protection)



Protection FCB has three major sub-portfolios



# Protection Portfolios and JCA Linkages

## Air & Missile Defense

- ❑ Active defense against air & missile attacks (P & R/D)
- ❑ Active and passive defenses of U.S. space systems and capabilities (P, M, R&D)

*\* Note: These activities are mapped to Force Protection's Tier 2 JCAs: Prevent (P), Mitigate (M) and R&D.*

## Combating WMD

- ❑ Protection of U.S. forces from the impact of WMD attacks (M, R&D)
- ❑ Maintenance of control over WMD and related/precursor materials (M, R&D)
- ❑ Response capabilities to manage and mitigate the consequences of WMD attacks and of man-made or natural disasters (M, R&D)
- ❑ Prevention of WMD proliferation (P, R&D)
- ❑ Defense crisis management (M, R&D)

## Protection

- ❑ Detection and defeat of IEDs at the point of attack (P, R&D)
- ❑ Active and passive defenses of U.S. forces, facilities, and equipment against attacks by IEDs and other kinetic means (P, M, R&D)
- ❑ Active and passive defenses to protect DoD critical infrastructure (P, M, R&D)
- ❑ U.S. nuclear weapons security (P, R&D)



# Major Portfolio Goal and Gap Influences

**STRATEGIC GOALS AND OBJECTIVES**

## **GDF/NMS/QDR**

- Balanced Portfolio
- Protect against current and future threats
- Prevent proliferation of WMD
- Mitigate by improving crisis management

**WARFIGHTER JOINT REQUIREMENTS**

## **SWarF/FP FCB/JCIDS**

- COCOM IPLs
- COCOM STIPLs, JCTDs
- Warfighter Challenges
- JUONS, DCRs
- CONOPs
- Joint Combat Capability Assessments

**OPERATIONAL CONSIDERATIONS**

- **Synchronizing:**
  - Requirements
  - Programming
  - Acquisition
- **Early/Rapid Technology Development**
- **Fielding and Sustaining Capability**



# Capability Goals

## □ Capability Goals

- **Goal of Protection is to execute layered comprehensive and layered protection of the United States and friendly nation personnel and assets, both at home and abroad. Further, Protection seeks to provide commanders and warfighters with the ability to detect, deter, defeat, and/or mitigate attacks on both combatant and noncombatant personnel, equipment, and facilities of the United States and/or its designated friends and allies. The Department will employ protection capabilities that leverage, complement, and coordinate with capabilities of the U.S. interagency contributors, state, and local government efforts, and friendly nation partners. The Department will lead protection efforts for assigned mission, support protect efforts of other agencies and enable partner nation protection.**





# Capability Goals (continued)

## □ Capability Goals

- Protection capabilities development will enhance protection against kinetic attacks (including WMDs), terrorist threats, and threats to nuclear weapons security. Improved coordination capabilities will enable rapid and effective Department participation in consequence at home and abroad
- The ultimate goal of the holistic approach is to enable Joint Force Commanders to establish and maintain Integrated Engagement Space –volumes of space where appropriate offensive and defense capabilities of the global, regional and local fights are employed to established/achieve desired effects. The layered methods use capabilities to attacks threats either on the ground or in flight, and to mitigate the effects of successful attacks

Goal to ensure commanders at all levels have the necessary equipment, technologies, and capabilities to employ both active and passive defense measures to defeat the threat



# Protection SWarF Attributes

## □ Effective

- The Joint Force (JF) Must have the ability to bring to bear the capabilities required to prevent/deter, dissuade, defeat or, if necessary, mitigate the effects of an attack. The JF must also have a process and capability for obtaining a desired effect on the enemy that leads to achieving an objective.

## □ Persistent

- JF components must have the ability to operate and survive within their environment, providing an enduring ability to achieve effects. This includes, hardening, use of protective garments to protection from biological and chemical threats, electromagnetic pulse protection, increased system reliability, and logistical support.

## □ Fully integrated

- All protection component capabilities, to include DoD and interagency capabilities must be joint, synchronized, and integrated into a focused efforts with a unified purpose.

## □ Networked

- Systems must be linked and synchronized in time and space to allow dispersed forces to communicate, maneuver, and share a common operating picture.

Protection Senior Warfighter Forum (SWarF) attributes provide metrics for solutions



# Desired Operational Capabilities

## Air & Missile Defense (P, M, R&D JCAs)

Area	Future State	Attributes
Air Missile Defense Ballistic Missile Defense	Ensure Joint Integrated Air and Missile Defense against cruise and ballistic missiles	Effective Persistent Fully integrated
Common Operational Picture	Improved common operational picture with automatically fuzzed information from specific sources or data formats in a multilevel security network-centric environment to be able to evaluate, interpret and predict	Persistent Fully integrated Networked
Wide Area Air Surveillance	Improved use of wide-area air surveillance of systems providing surveillance to locate, tag, and track WMD, hostile forces, aircraft, cruise missile and ballistic missiles	Persistent Fully integrated Networked



# Desired Operational Capabilities

## Air & Missile Defense (P, M, R&D JCAs)

Area	Future State	Attributes
<p>Detection of small, low speed, low-altitude targets</p>	<p>Improved capability to detect small, low-speed, low- altitude targets to adequately protect join maneuver/maneuvering forces from reconnaissance, surveillance, and target acquisition (RSTA)</p>	<p>Persistent Fully integrated Networked</p>
<p>Discrimination for air and ballistic vehicles</p>	<p>Reliably provide adequate tracking information (discrimination) for air and ballistic vehicles</p>	<p>Persistent Fully integrated Networked</p>
<p>Capability to provide time-critical assessments</p>	<p>Improved capability to provide time-critical assessment to permit adequate engagement decisions (use lethal or nonlethal capability or continue to monitor)</p>	<p>Persistent Fully integrated Networked</p>



# Desired Operational Capabilities

## Combating WMD (M, R&D JCAs)

Area	Future State	Attributes
Combating WMD and homeland defense	Improved nonlethal capability for combating WMD and homeland defense missions	Effective Persistent
Standoff detection of fissile materials	Improved ability to detect fissile materials such as nuclear devices at standoff ranges	Effective Persistent Networked
Standoff detection of CBRNE	Improved standoff detection of chemical, biological, radiological, nuclear, and enhanced high explosive (CBRNE) materials	Effective Persistent Networked
Advanced biotechnology threats	Improved countermeasures against advanced biotechnology threats	Effective Persistent



# *Desired Operational Capabilities*

**Combating WMD  
(M, R&D JCAs)**

<b>Area</b>	<b>Future State</b>	<b>Attributes</b>
<b>Post-detonation nuclear forensics</b>	<b>Develop improve post-detonation nuclear forensics capabilities</b>	<b>Persistent Networked</b>



# Desired Operational Capabilities

## Protection (P, M, R&D JCAs)

Area	Future State	Attributes
Counter Improved Explosive Devices (C-IED)	Enhanced protection against IEDs to include detection and neutralization	Effective Persistent
Biometrics and Forensics	Improved identity dominance/biometrics/forensics to locate, tag, track terrorists and WMD in denied areas	Effective Persistent Fully integrated Networked
Force Protection	Improved capability to protect against full array of potential threats, including rockets, artillery and mortar (RAM) projectiles of advanced cruise missiles	Effective Persistent
Critical Infrastructure Protection	Improved capability to provide Critical Infrastructure Protection from terrorists threats and threats from space	Effective Persistent
Ground Vehicle Protection	Improved ground vehicle protection	Effective Persistent



# Questions?





# BACKUP



# *Protection Joint Capability Area Attributes*

- ❑ Effective. The Joint Force (JF) Must have the ability to bring to bear the capabilities required to prevent/deter, dissuade, defeat or, if necessary, mitigate the effects of an attack. The JF must also have a process and capability for obtaining a desired effect on the enemy that leads to achieving an objective. This can be measured by:
  - **Ability to limit collateral damage**
  - **Degree of achievement of a physical, functional, or mission “kill”**
  - **Degree of protection achieved for personnel, physical assets, and information**
  - **Degree of lethal and no-lethal effects inflicted on an adversary for those capabilities required for the protection mission**
  - **Time required from identification of a specific threat to defeat of that threat**
  - **Intelligence gathering: degree of impact and effects of an enemy threat on friendly forces or non-combatants in the operating area**
  - **Quality of and accuracy of information in the knowledge base**
  - **Time required to disseminate and obtain or receive required information throughout the force**



# Protection Joint Capability Area Attributes

- ❑ Persistent. JF components must have the ability to operate and survive within their environment, providing an enduring ability to achieve effects. This includes, hardening, use of protective garments to protection from biological and chemical threats, electromagnetic pulse protection, increased system reliability, and logistical support. This can be measured by:
  - **Ability of personnel, physical assets and information systems to remain effective in the operational environments**
  - **Percentage of mission capability lost, over time, due to adversary actions**
  - **Time required to restore effective operations after sustaining the effects of an adversary's attack**



# *Protection Joint Capability Area Attributes*

- ❑ Fully integrated. All protection component capabilities, to include DoD and interagency capabilities must be joint, synchronized, and integrated into a focused efforts with a unified purpose. This can be measured by:
  - **Degree of protection achieved by the JFC at Point of Embarkation (POE) to the Point of Debarkation (POD) and back (force projection)**
  - **Degree of integration of protection methods incorporated by the JF**
  - **Degree of integration of interagency and multinational participants in protection plans**
  - **Degree of integration of mission technology, and forces to achieve a unified purpose/effort**



# *Protection Joint Capability Area Attributes*

- ❑ **Networked.** Systems must be linked and synchronized in time and space to allow dispersed forces to communicate, maneuver, and share a common operating picture.
  - **Time required from receipt of warning to implementation of protection measures**
  - **Degree of interoperability between actors, including those within DoD and those involving DoD, Law Enforcement Agencies, and international players in protection**
  - **Degree to which an accurate presentation of the battlespace is conveyed to the JF through a common operating picture**
  - **Degree to which information is shared horizontally and vertically**
  - **Time required to identify an enemy threat and provide warning**
  - **Percentage of information exchange requirements met**



# Protection in JCA Terms



Tier 2

## Prevent (Active Defense)

Tier 3

### Prevent Kinetic Delivered Attack

- Above surface (IAMD, Counter ASAT)
  - Maneuvering
  - Non-maneuvering
- Surface (Installation Defense)
  - Maneuvering
  - Non-maneuvering
- Sub-surface (Torpedo, MCM)
  - Maneuvering
  - Non-maneuvering

Tier 4/5

Tier 3

### Prevent Non-Kinetic Delivered Attack

- Above surface
- Surface
- Sub-surface

Tier 4

## Mitigate (Passive Defense & Consequence Management)

Tier 2

### Mitigate Lethal Effects

Tier 3

- Chemical (lethal)
- Biological (lethal)
- Radiological
- Nuclear
- EMP (lethal)
- Explosives
- Projectiles
- Directed Energy (lethal)
- Natural hazards

Tier 4

### Mitigate Non-Lethal Effects

Tier 3

- Kinetic munitions
- Chemical (non-lethal)
- Biological (non-lethal)
- EMP (non-lethal)
- Electro-magnetic spectrum
- Direct Energy (non-lethal)

Tier 4



# Protection in JCA Terms

**Tier 2** Research and Development

**Tier 3** Basic Research –

-- The ability to conduct a systematic study directed toward the discovery of knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications

**Tier 3** Applied Research

- The ability to conduct a systematic study to understand the means to meet a recognized and specific need

**Tier 3** Advanced Technology Development

- The ability to product innovative and unique components and prototypes that can be integrated into defense systems for field experiments and/or tests in a simulated “or operational “environment” to assess military utility” prior to full development.