



CRANE DIVISION

NAVAL SURFACE WARFARE CENTER



Distribution Statement A – Approved for public release; distribution unlimited.

Universal Fire Control System for Crew Served Weapons

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Miniature Day/Night Sight – CSW System



System Mission: MDNS-CSW Provides Crew-Served Weapons Operators Dramatically Improved Day and Night Aiming Capabilities Out to the Maximum Effective Range of Their Weapons, or to the Maximum Detection Range of Night Vision Goggles.

Background

- **Defense Acquisition Challenge (DAC) Program:**
Established by Congress to Increase Introduction of Innovative and Cost-Saving Technologies and Products into Existing DoD Acquisition Programs
- **Two DACs Awarded**
 - **Fully Integrated Fire Control System (Phase I & Phase II)**
 - **Improved Flash Hider**

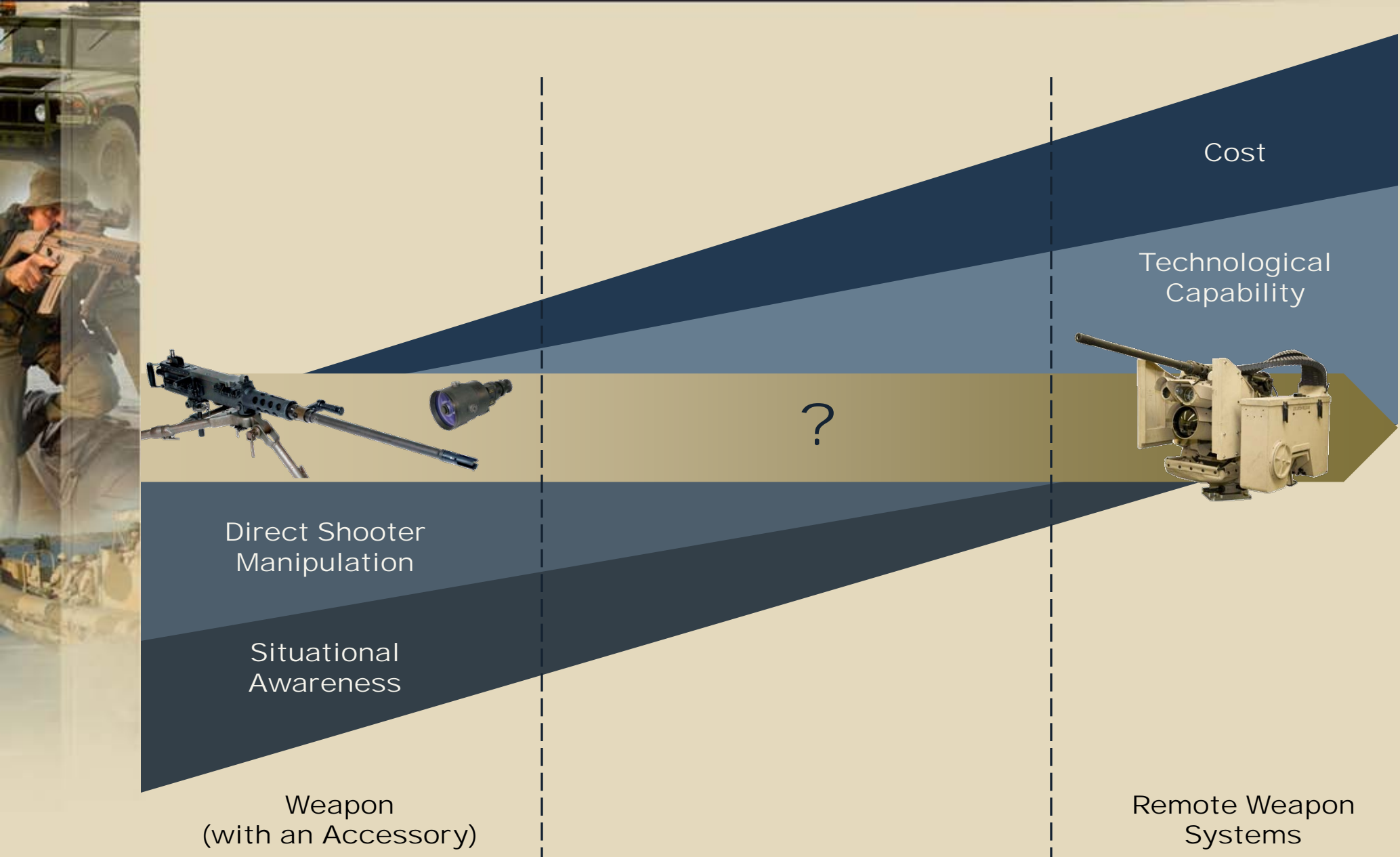
Why a Fire Control System for CSW?

Argument Against: “*But, It’s an Area Weapon!*”

Argument For:

- **Reduce Collateral Damage**
 - No Walking Rounds onto Target
- **Increase Number of Initial Rounds on Target**
 - *Requirement:* 1000 meter first burst hit probability of $P(\text{hit}) = 0.75$ on a HMMWV-sized target (side profile) using M33 ball ammunition. Burst is defined as 5 to 7 rounds.
- **Decrease Ammunition Usage**
 - Decrease in Ammunition Usage Quickly Offsets Cost of Fire Control System (\$2.93/round)
 - With Just the Addition of a Red Dot Sight during Qualifications, Three Times Less Ammunition Was Used to Engage Targets than Traditional Iron Sights (Potential 75% Reduction in Ammunition Cost)

M2 Fire Control System Continuum



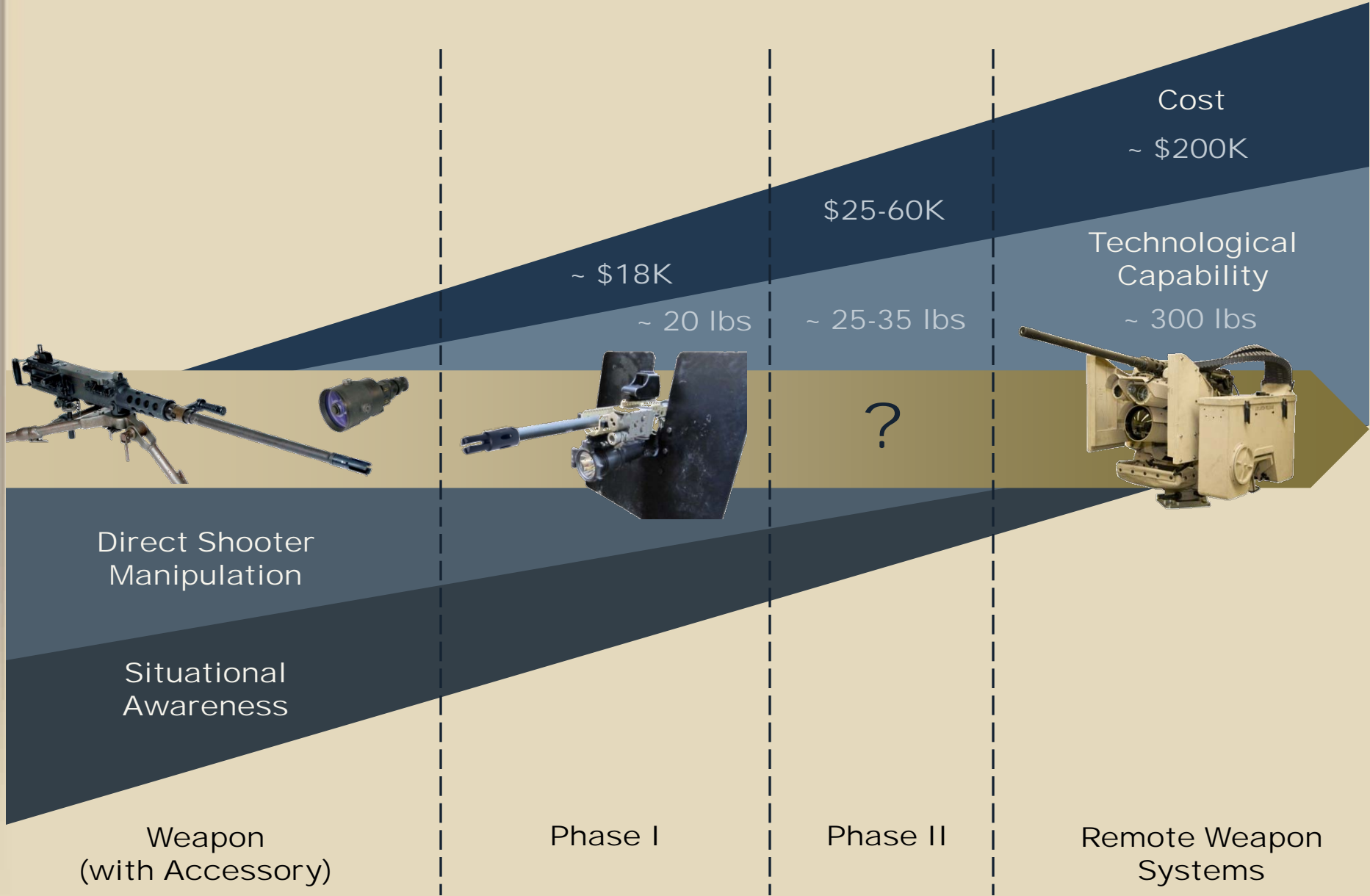
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Phase I



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M2 Fire Control System Continuum



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MDNS-CSW Components

PHASE I

- **Enhanced Combat Optical Sight – Heavy (ECOS-H)**
- **Visible Bright Light – Heavy (VBL-H)**
- **Crew Served Heavy Weapon Aiming Laser (CSHWAL)**
- **Rail Interface System – Heavy (RIS-H)**
- **Crew Served Flash Suppressor (CSFS)**

PHASE II

- **Advanced Enhanced Combat Optical Sight – Heavy (Advanced ECOS-H)**
- **Clip-On Night Vision Sight – Heavy (CNVD-H)**
- **Flat Panel Display (FPD)**
- **Laser Range Finder (LRF)**
- **Ballistic Processor Module (BPM)**

Phase I vs. Phase II

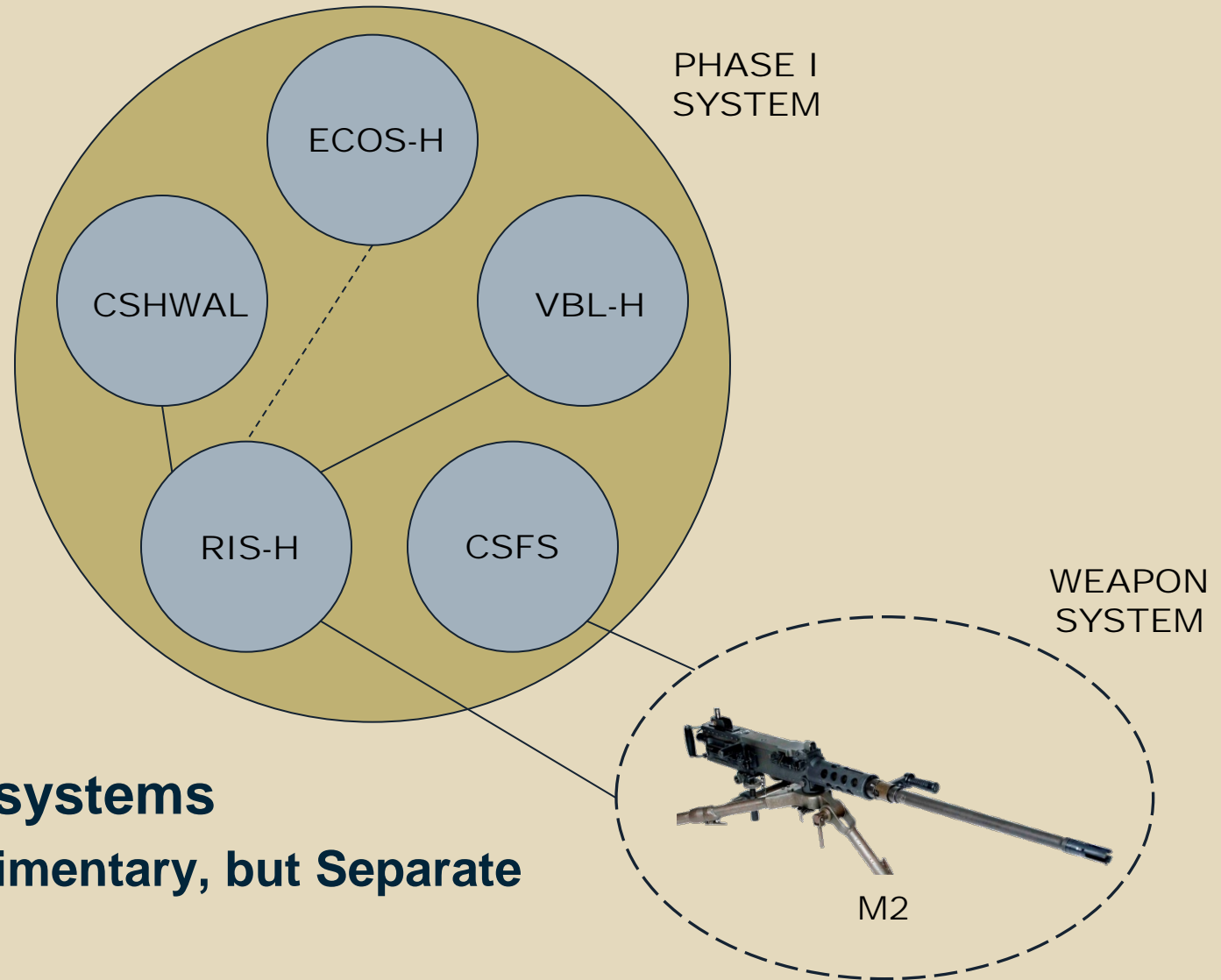
PHASE I

- **Primarily M2HB Focused**
- **No Communication between Subsystems**
- **Aiming Capability: Visible/IR Pointing Laser and Ballistic Compensated Reticle**

PHASE II

- **Applicable to the M2HB, MK47/MK19, & MK44**
- **Communication between Subsystems**
- **Aiming Capability: Disturbed Reticle Solution**

Phase I System



- **Five Subsystems**
 - **Complimentary, but Separate**

ECOS-H Accuracy Data (Phase I)

Operator	Target Distance			
	300-yards	500-yards	700-yards	1,000-yards
1	5 / 5	5 / 5	2 / 5	3 / 5
2	5 / 5	5 / 5	3 / 5	2 / 5
3	5 / 5	4 / 5	3 / 5	1 / 5
4	5 / 5	5 / 5	2 / 5	0 / 5
5	3 / 5	4 / 5	5 / 5	1 / 5
6	3 / 5	5 / 5	1 / 5	3 / 5
7	5 / 5	5 / 5	5 / 5	1 / 5
8	5 / 5	5 / 5	2 / 5	2 / 5
9	5 / 5	5 / 5	4 / 5	3 / 5
10	5 / 5	5 / 5	1 / 5	3 / 5
11	5 / 5	5 / 5	4 / 5	4 / 5
12	5 / 5	5 / 5	4 / 5	4 / 5

Iron Sights
(Day)

ECOS-H
(Day)

Operator	Target Distance				
	300-yards	500-yards	700-yards	1,000-yards	1,500-yards
1	5 / 5	5 / 5	3 / 5	0 / 5	3 / 5
2	4 / 5	5 / 5	2 / 5	1 / 5	2 / 5
3	5 / 5	5 / 5	3 / 5	0 / 5	3 / 5
4	5 / 5	3 / 5	2 / 5	1 / 5	1 / 5
5	5 / 5	5 / 5	5 / 5	4 / 5	2 / 5
6	5 / 5	5 / 5	5 / 5	5 / 5	1 / 5
7	5 / 5	5 / 5	3 / 5	3 / 5	2 / 5
8	5 / 5	5 / 5	3 / 5	0 / 5	4 / 5
9	5 / 5	4 / 5	2 / 5	3 / 5	2 / 5
10	5 / 5	5 / 5	4 / 5	3 / 5	1 / 5
11	5 / 5	5 / 5	5 / 5	1 / 5	1 / 5
12	4 / 5	5 / 5	3 / 5	2 / 5	0 / 5

CSHWAL Accuracy Date (Phase I)

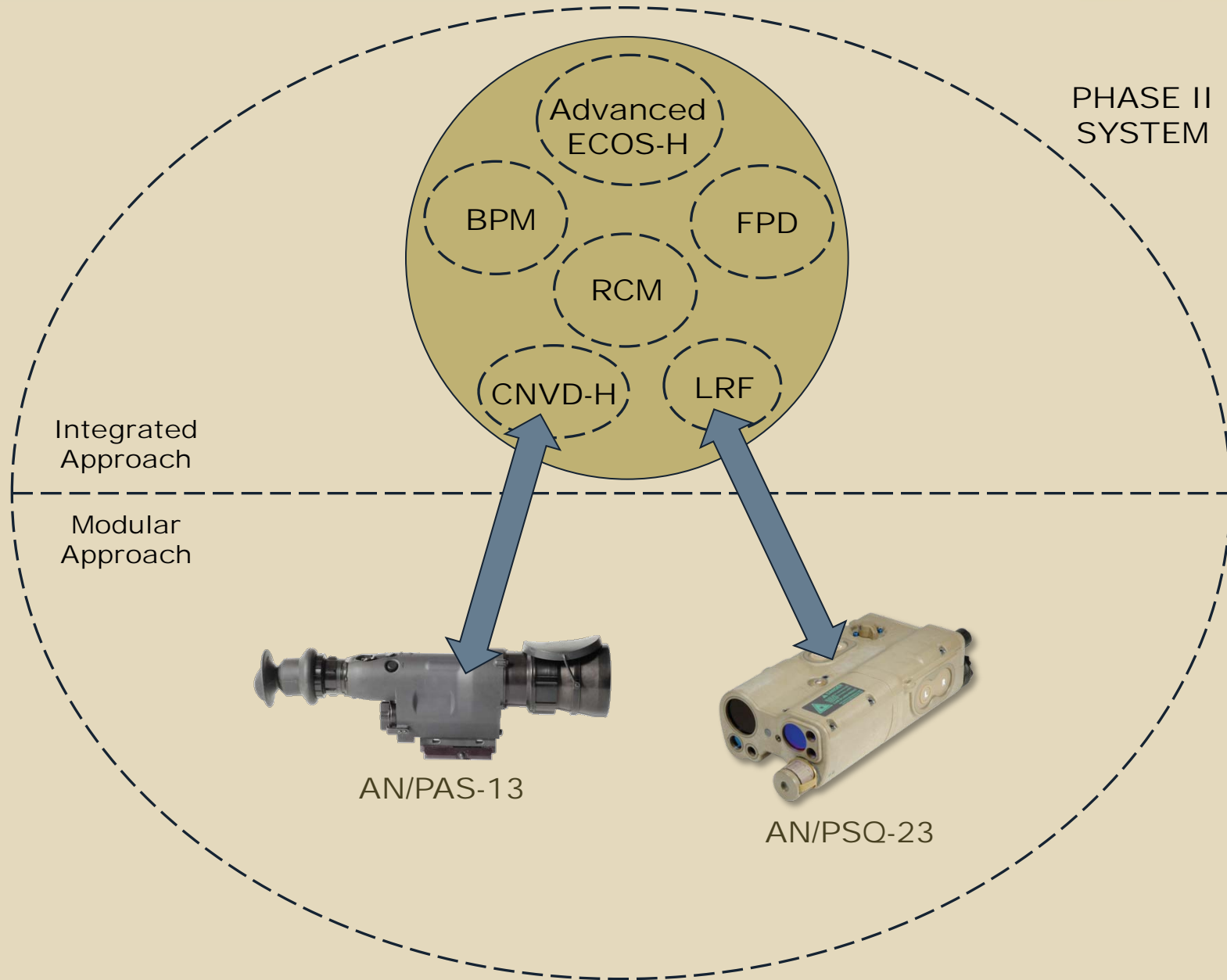
CSHWAL Visible Pointer (Day @ 300 yds)

	Operator											
	1	2	3	4	5	6	7	8	9	10	11	12
P _H	30/30	30/30	30/30	30/30	30/30	30/30	27/30	30/30	30/30	24/30	29/30	30/30

CSHWAL IR Pointer (Night)

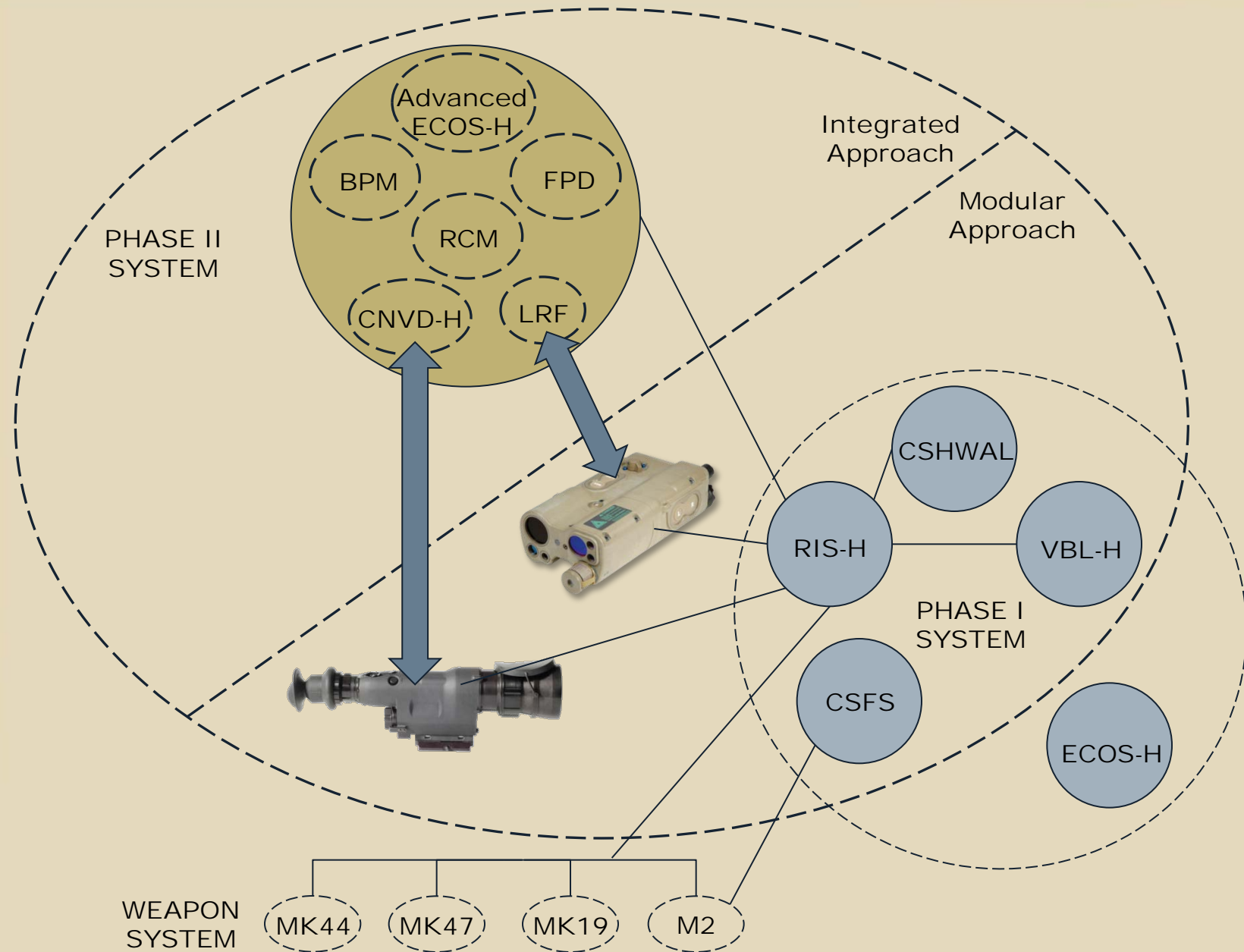
Operator	Target Distance			
	300-yards	500-yards	700-yards	1,000-yards
1	5 / 5	5 / 5	5 / 5	5 / 5
2	5 / 5	5 / 5	5 / 5	5 / 5
3	5 / 5	5 / 5	5 / 5	5 / 5
4	5 / 5	5 / 5	5 / 5	5 / 5
5	5 / 5	5 / 5	5 / 5	5 / 5
6	5 / 5	4 / 5	5 / 5	5 / 5
7	5 / 5	5 / 5	5 / 5	2 / 5
8	5 / 5	5 / 5	5 / 5	5 / 5
9	5 / 5	5 / 5	5 / 5	5 / 5
10	5 / 5	5 / 5	5 / 5	5 / 5
11	5 / 5	5 / 5	5 / 5	4 / 5
12	5 / 5	5 / 5	5 / 5	5 / 5

Phase II System



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Complete Fire Control System



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Phase II Schedule

- **Full & Open Competition of a Modular and Integrated Fire Control System**
- **8 Mar 2012: Release of Solicitation**
- **4 May 2012: Close of RFP**
- **May/June 2012: Testing & Source Selection**
- **Aug 2012: Award of Contract(s)**



Contact Information



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